Trypillia Mega-Sites and European Prehistory 4100-3400 BCE

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CHAPTER 8

Chronology and Demography: How Many People Lived in a Mega-Site?

JOHANNES MÜLLER, ROBERT HOFMANN, LENNART BRANDTSTÄTTER, RENÉ OHLRAU AND MYKHAILO VIDEIKO

INTRODUCTION

Since the discovery of the huge dimensions of Trypillia BII/CI mega-sites, estimations about their population size have mainly resulted magnitudes which are as extraordinary for European prehistory as the dimensions of the sites themselves. A variety of population calculations is known, usually (e.g. for Taljanky and Maidanetske) focusing on around 7500–25,000 inhabitants per site (Shmaglij, 1982; Shmaglij & Videiko, 1987; Kruts, 1989; Ohlrau, 2015). A basic assumption for these population estimations is the contemporaneity of the majority of houses in each mega-site, which might be problematic.

Also, for the reconstruction of the overall population density in the Southern Buh and Dnipro Interfluve, the question of the contemporaneity, or alternatively a sequential appearance, of mega-sites is very important. In many views, the mega-sites Nebelivka–Dobrovody–Taljanky–Maidanetske are described as a chronological sequence of about 15,000 people, moving after about fifty years from one site to the next, at a distance of about 20 km (Kruts, 1989). In other views, a contemporary existence of some of the mega-sites is supposed (Müller *et al.*, in print). In such an argumentation, no less than about 30,000 people were projected as living contemporarily in mega-sites of the Volodymyrivsko-Tomashivska group.

In consequence, for Trypillia mega-sites, the question of the contemporaneity of the detected houses is still most important for further analyses and interpretations: are we really dealing with up to *c.* 1500–2500 contemporary house-units at one site? If this is the case, we would be dealing with probably more than *c.* 15,000 inhabitants per site; that makes them comparable on a demographic scale with early Mesopotamian cities. Furthermore, it is important to develop not only estimations, but also archaeological arguments for whether neighbouring mega-sites also existed contemporarily or if the aforementioned model of a population shift from one mega-site to the next is valid (cf. Diachenko & Menotti, 2012). Both aspects, the demographic dimension of one site and the population density within the region, are important for further aspects of economic, political, and social organization and, not least, questions of the environmental developments, in particular the carrying capacity of the landscape.

Thus, the main goals of this inquiry are twofold– regarding precise chronology and demography: How many houses existed contemporarily in a mega-site? How many mega-sites existed contemporarily? As a result, we might be able to answer the question: How many people lived in a mega-site? How many people lived in the Uman core area of the mega-sites?

Of basic importance for our approach is the interpretation of new ^{14}C-dates from Maidanetske; the first time that scientific dating has provided information about the chronology of mega-site house rings. Furthermore, consideration of typo-chronologies, as fundamental for the question of which sites existed contemporarily, might enable the formulation of probability models of population densities.

METHODS

Until recently, the arguments for different views of Trypillia demography were manifold, but still restricted because of the lack of reliable scientific dating. In principle, different interpretations of the same archaeological arguments are still possible:

1. The classical layout of a mega-site – a ground plan with concentric house rings around an empty central place and the very few stratigraphic overlaps of features – were used as an argument for the contemporaneity of the houses. Nevertheless, a succession of concentric house rings, for example, from an earlier inner ring to a later outer ring, would also result in such sophisticated settlement plans, but reduce the calculated number of inhabitants, for example, in Maidanetske with its nine house rings, by nearly eighty per cent.

2. The regular burning of houses with the regular rectangular outline of the *ploschchadki* formed an argument for a consciously intended destruction of a whole settlement at the end of its duration. While this would imply the contemporaneity of most of the detected houses in mega-sites, alternative interpretations are also possible: for example, the burning of houses in one house ring after the other that would imply only a contemporaneity of the houses of one house ring (Zbenovich, 1990).
3. The intense studies of Trypillia ceramic shapes and ornamentation, especially BII/C ceramic ornamentation, proved statistically relevant typological clusters of features that have similar decoration and shapes (Ryzhov, 1999). These studies confirmed the typological division of Trypillia into the known main phases in their regional settings (cf. Diachenko & Menotti, 2015). Additionally, a typological differentiation of the Volodymyrivsko-Tomashivska and Kosenivska local group into several typological subgroups was undertaken. These typological sequences were interpreted as chronological sequences. Since with exceptions (Ryzhov, 1990; Shmaglij & Videiko, 1990) only one sub-phase was detected at each mega-site, the typological development was used as an argument for the contemporaneity of the features of each mega-site. Furthermore, the sequential sub-phases with each sub-phase of, for example CI, was used as an argument for the sequential appearance of mega-sites one after the other (cf. Kruts *et al.*, 2001; Diachenko, 2012). On the contrary, the lack of ^{14}C-dates and vertical stratigraphy made it clear that the different typological groups do not necessarily have to represent chronological phases. Different design systems also could reflect, for example, different contemporary social groups that express their differences and similarities in the medium of ceramic ornamentation among other things.
4. The methodological haziness of ^{14}C-dating in respect to the identification of short sequences, such as a two- to three-generation biography of mega-sites (*c.* fifty years by Kruts *et al.*, 2001; *c.* seventy to eighty years by Diachenko, 2012: figure 5.5), was used to underestimate the overlap of ^{14}C-dates from different sites (cf. Diachenko & Menotti, 2015). The reverse of this argument was taken by other scholars to describe the contemporaneity of mega-sites.

In consequence, a research strategy was developed, which included the following steps of analysis and interpretation:

1. In Maidanetske, the excavation strategy involved test-pits for each house ring, to gain radiometric dating samples (cf. Müller & Videiko, 2016). Context analyses of the samples and the evaluation of the sample material were involved in the interpretation of the data. The Bayesian approach was applied where possible.
2. The results were used to reconstruct a model of the contemporaneity of houses in Maidanetske. Using archaeological and ethnographic arguments in the reconstruction of the number of house inhabitants, a model of the demographic dimension of Maidanetske was developed.
3. Existing typological analyses of BII/CI ceramic inventories were used for correspondence analyses (CA) to estimate the statistical trajectories of stylistic differences. Through association with the already known and new ^{14}C-data, the CA-results were translated into a chronological pattern.
4. In doing so, a model on population dynamics within the Uman region was developed.

Dating a Mega-Site

In Maidanetske, during the 2013 campaign, both the trenches on house 44 and on two pits, as well additional small test trenches, which focus on geomagnetic features of houses in the concentric house rings 1–9, helped in dating the concentric house rings (Figure 1). These test trenches were carried out in eight cases, so that–together with the house and pit in trench 51/52–all nine house rings of the southwestern part of Maidanetske would yield information. Owing to the scarcity of datable material (due to the small amount of charcoal and bones in the house layers that are very near to the recent surface), only seven of the nine rings produced samples that could be used for radiometric dating. The Poznań laboratory succeeded in dating thirty-five samples (List 1; cp. also List 2). In spite of this, the spatial distribution of the dated houses allows judgement about the probability that the features were contemporary.

The context analyses of the samples mainly involved analyses of the stratigraphic location of the samples. An example of such a stratigraphy could be seen in house 44 (Müller *et al.*, 2014; Müller & Videiko, 2016).

The *ploschchadka* of house 44 was covered by a top layer of black soil with a very high concentration of humus, followed by a more greyish-brown sediment with less humus (Figure 2). Below these layers follows the daub package from the burnt house with a thickness of about 0.2–0.3 m. In the southwestern part of the house especially, a differentiation of the daub package into two layers was possible: a *c.* 10 cm thick top layer with small pieces of daub (nearly no organic intrusions), and a surface with smoothed horizontal

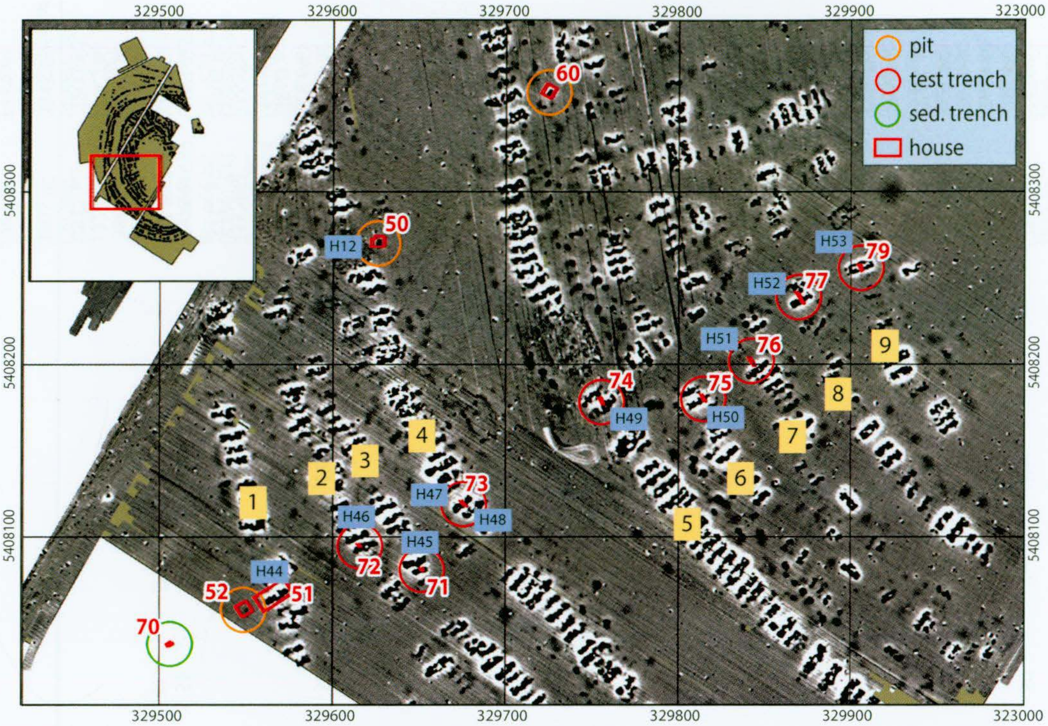

Figure 1. *Maidanetske, SSW part of the settlement. The nine house rings, the excavation trenches and the numbers of the houses that were test-trenched or fully excavated (house 44). Pits 50, 52, and 60 are located in trenches with the same numbers. ¹⁴C-data are available from nearly all features (see text).*

daub pieces beneath the floor. The burnt floor layer consists of daub from a mineral-tempered pavement, with negative imprints of timber stakes at its bottom. The ground floor itself lies on top of a loess soil with a conserved fA_1 horizon. The upper edge of the loess soil beneath the floor level is characterized by different artefacts (pots, querns) that were placed there. In the areas outside of the ground floor layer the loess soil grew, probably as a result of domestic activities. This greyish loess sediment was partly covered by the top daub layer. Beneath the conserved loess soil and the anthropogenically influenced loess soil, the sediment of an fBw-horizon is visible that was hardly influenced by bioturbation. In all other trenches, the house stratigraphies were, in principle, similar to the one described for house 44.

The overall pattern of the settlement layout is the concentric arrangement of nine house rings, for each of which samples for dating were desired; this was possible for all except rings 3 and 5.

Ring 1 (house 44)

Besides one ^{14}C-date from a disturbance on top of the daub layer that represents a *terminus ante quem* (*c.* 750–450 cal BC), two ^{14}C-dates are relevant for dating the house. Poz-60162 (4965 ± 35 bp, bone, *Sus*, 3782–3702 cal BC) belongs to the daub layer, Poz-60161 (5015 ± 35 bp, bone, *Sus*, 3929–3715 cal BC) to the ground floor that indicates the usage of the house (List 1). The combination of the radiometric results, and of the vertical stratigraphy between both layers (Figure 2), makes usage of the house around *c.* 3700 BCE plausible, as also indicated by the sequential calibration of the two dates (Figure 3).

Four ^{14}C-dates belong to the lower part of the pit 52 that is associated with house 44 (List 1; cp. Müller & Videiko, 2016). Two of them represent *termini post quem* (possible old wood effect–60190 and 60347 *Quercus*), the two others *termini ad quem* (Poz-60292 4920 ± 40 bp (bos) from spit 1e (3713–3651 cal BC), and Poz-60296 4955 ± 35 bp from spit 1f (bone of a large mammal): 3775–3695 cal BC). Thus, the depositional processes probably took place in the 38th century BCE (Figure 3). Accordingly, there is a high probability that pit 52 existed contemporarily with house 44.

Ring 2 (house 46)

A similar stratigraphy was observed in trench 72, where the test-trench revealed the remains of the geomagnetic feature house 46 (*c.* 12 × 5 m). The ^{14}C-date Poz-60298 (4290 ± 40 bp, medium mammal, 2928–2879 cal BC) came from a layer on top of the house and represents a *terminus ante quem* (List 2).

List 1. *Maidanetske ^{14}C-dates.*

Sample name	Laboratory-ID	^{14}C age	Deviation	N (%)	C (%)	col (%)	find-ID	feature	level	find x	find y	trench	Material	Taxon	Description	Calibrated (68.2%)	Calibrated (95.4%)
Mai-50033 (feature 50004)	Poz-60157	4810	35	2.0	4.5	1.0	50033	50004	2	B	2	50	Bone	Bos		3645 BC (17.4%) 3630 BC; 3580 BC (50.8%) 3534 BC	3656 BC (26.4%) 3618 BC; 3611 BC (69.0%) 3521 BC
Mai-50038 (feature 50004)	Poz-60186	5050	35				50038	50004	2	A	1	50	Charcoal	Quercus		3942 BC (51.8%) 3857 BC; 3842 BC (1.5%) 3839 BC; 3820 BC (15.0%) 3794 BC	3957 BC (95.4%) 3766 BC
Mai-50073 (feature 50009)	Poz-60187	4980	35				50073	50009	3	A	2	50	Charcoal	Quercus		3790 BC (68.2%) 3707 BC	3930 BC (10.8%) 3877 BC; 3805 BC (84.6%) 3661 BC
Mai-50130 (feature 50008)	Poz-60158	5020	35	2.0	4.9	1.8	50130	50008	2	C	2	50	Bone	Ovis		3936 BC (33.9%) 3873 BC; 3810 BC (26.9%) 3761 BC; 3741 BC (3.3%) 3731 BC; 3725 BC (4.1%) 3715 BC	3943 BC (42.8%) 3855 BC; 3846 BC (3.1%) 3831 BC; 3824 BC (49.5%) 3710 BC
Mai-50140-1 (feature 50012)	Poz-60188	5005	30				50140	50012	4	A	3	50	Charcoal	Fraxinus		3905 BC (12.3%) 3880 BC; 3801 BC (55.9%) 3712 BC	3940 BC (28.6%) 3860 BC; 3814 BC (66.8%) 3704 BC
Mai-50140-2 (feature 50012)	Poz-60189	5125	35				50140	50012	5	A	4	51	Charcoal	Corylus		3975 BC (36.2%) 3938 BC; 3860 BC (32.0%) 3813 BC	3991 BC (50.7%) 3895 BC; 3881 BC (44.7%) 3800 BC

Continued

***List 1.** Continued*

Sample name	Laboratory-ID	^{14}C age	Deviation	N (%)	C (%)	col (%)	find-ID	feature	level	find x	find y	trench	Material	Taxon	Description	Calibrated (68.2%)	Calibrated (95.4%)
Mai-50197 (feature 50012)	Poz-60159	5020	30	0.8	2.4	0.1	50197	50012	4	A	3	50	Bone	Bos		3933 BC (38.5%) 3875 BC; 3807 BC (29.7%) 3766 BC	3943 BC (44.5%) 3856 BC; 3843 BC (1.3%) 3835 BC; 3822 BC (49.6%) 3710 BC
Mai-51464 (feature 51007)	Poz-60160	2450	30	2.4	5.4	2.3	51464	51007	4	H	19	51	Bone	Bos		746 BC (24.6%) 686 BC; 666 BC (8.6%) 643 BC; 554 BC (28.8%) 475 BC; 463 BC (2.1%) 455 BC; 445 BC (4.1%) 431 BC	754 BC (26.7%) 681 BC; 670 BC (15.5%) 609 BC; 595 BC (53.2%) 411 BC
Mai-51498 (feature 51007)	Poz-60161	4965	35	2.6	4.3	1.3	51498	51007	4	L	20	51	Bone	Sus		3782 BC (68.2%) 3702 BC	3905 BC (3.4%) 3880 BC; 3801 BC (92.0%) 3655 BC
Mai-51606 (feature 51018)	Poz-60162	5015	35	2.2	5.8	3.0	51606	51018	4b	M	11	51	Bone	Sus		3929 BC (28.8%) 3877 BC; 3805 BC (27.9%) 3761 BC; 3742 BC (11.6%) 3715 BC	3943 BC (38.9%) 3855 BC; 3846 BC (2.5%) 3831 BC; 3824 BC (54.0%) 3707 BC
Mai-52029 (feature 52001)	Poz-60190	5165	35				52029	52001	1e	F	29	52	Charcoal	Quercus		4036 BC (12.1%) 4022 BC; 3995 BC (56.1%) 3954 BC	4045 BC (89.2%) 3940 BC; 3857 BC (6.2%) 3817 BC
Mai-52039 (feature 52001)	Poz-60295	4920	40	0.5	1.9	0.1	52039	52001	1e	F	29	52	Bone	Bos		3713 BC (68.2%) 3651 BC	3779 BC (95.4%) 3642 BC
Mai-52042 (feature 52001)	Poz-60347	5125	35				52042	52001	1f	F	30	52	Charcoal	Quercus		3975 BC (36.2%) 3938 BC; 3860 BC (32.0%) 3813 BC	3991 BC (50.7%) 3895 BC; 3881 BC (44.7%) 3800 BC

Continued

List 1. Continued

Sample name	Laboratory-ID	^{14}C age	Deviation	N (%)	C (%)	col (%)	find-ID	feature	level	find x	find y	trench	Material	Taxon	Description	Calibrated (68.2%)	Calibrated (95.4%)
Mai-52048 (feature 52001)	Poz-60296	4955	35	0.6	2.2	0.3	52048	52001	1f	H	31	52	Bone	Large mammal		3775 BC (68.2%) 3695 BC	3798 BC (95.4%) 3652 BC
Mai-60113 (feature 60002)	Poz-60348	5020	35	1.7	3.0	2.3	60113	60002	5	B	22	60	Bone	Large mammal		3936 BC (33.9%) 3873 BC; 3810 BC (26.9%) 3761 BC; 3741 BC (3.3%) 3731 BC; 3725 BC (4.1%) 3715 BC	3943 BC (42.8%) 3855 BC; 3846 BC (3.1%) 3831 BC; 3824 BC (49.5%) 3710 BC
Mai-60132 (feature 60006)	Poz-60191	4970	30				60132	60006	5	B	2	60	Charcoal	Quercus		3777 BC (68.2%) 3707 BC	3893 BC (1.6%) 3884 BC; 3799 BC (93.8%) 3661 BC
Mai-60145 (feature 60009)	Poz-60192	5060	35				60145	60009	6	D	2	60	Charcoal	Fraxinus		3942 BC (30.5%) 3895 BC; 3882 BC (17.4%) 3855 BC; 3845 BC (6.2%) 3834 BC; 3822 BC (14.1%) 3800 BC	3958 BC (95.4%) 3780 BC
Mai-60167 (feature 60009)	Poz-60349	4980	35	1.1	3.4	1.4	60167	60009	7	D	1	60	Bone	Bos		3790 BC (68.2%) 3707 BC	3930 BC (10.8%) 3877 BC; 3805 BC (84.6%) 3661 BC
Mai-60189 (feature 60009)	Poz-60350	5065	35	2.5	6.0	6.2	60189	60009	8	D-E	1-2	60	Bone	Bos		3944 BC (21.7%) 3907 BC; 3880 BC (46.5%) 3801 BC	3959 BC (95.4%) 3785 BC
Mai-70001 (Grotovine 1)	Poz-60196	6390	70		0.5							70	Soil organic matter		K7 dark brownish with loess	5466 BC (31.0%) 5404 BC; 5386 BC (37.2%) 5318 BC	5481 BC (95.4%) 5225 BC

Continued

List 1. Continued

Sample name	Laboratory-ID	^{14}C age	Deviation	N (%)	C (%)	col (%)	find-ID	feature	level	find x	find y	trench	Material	Taxon	Description	Calibrated (68.2%)	Calibrated (95.4%)
Mai-70002 (Grotovine 2)	Poz-60197	4210	30									70	Soil organic matter		K5 dark brown	2890 BC (26.4%) 2864 BC; 2806 BC (39.7%) 2760 BC; 2717 BC (2.1%) 2713 BC	2900 BC (33.3%) 2848 BC; 2814 BC (47.7%) 2737 BC; 2731 BC (14.5%) 2679 BC
Mai-70003 (Grotovine 3)	Poz-60198	4775	35									70	Soil organic matter		K8 dark brown	3636 BC (7.6%) 3626 BC; 3597 BC (60.6%) 3526 BC	3644 BC (91.9%) 3515 BC; 3411 BC (0.8%) 3405 BC; 3399 BC (2.7%) 3384 BC
Mai-72029 (feature 720005)	Poz-60298	4290	40	1.3	4.2	0.8	72029	720005	4		2	72	Bone	Medium Mammal		2928 BC (68.2%) 2879 BC	3022 BC (93.7%) 2871 BC; 2801 BC (1.7%) 2779 BC
Mai-73008 (feature 730005)	Poz-60351	4710	35	0.7	3.2	1.2	73008	730005	3		2	73	Bone	Ovis/ Capra		3627 BC (16.3%) 3596 BC; 3527 BC (16.3%) 3498 BC; 3436 BC (35.6%) 3378 BC	3632 BC (26.5%) 3561 BC; 3537 BC (20.9%) 3492 BC; 3469 BC (48.0%) 3373 BC
Mai-73041 (feature 73005)	Poz-60199	4895	35	2.4	9.0	3.4	73041	73005	3		2	73	Bone	Medium mammel		3697 BC (68.2%) 3649 BC	3762 BC (6.3%) 3725 BC; 3715 BC (89.1%) 3637 BC
Mai-74001 (feature 740002)				0.2	2.4		74001	740002	2		2	74	Bone		not suitable		
Mai-74003 (feature 74004)							74003	74004	3		4	74	Bone		not suitable		

Continued

List 1. Continued

Sample name	Laboratory-ID	^{14}C age	Deviation	N (%)	C (%)	col (%)	find-ID	feature	level	find x	find y	trench	Material	Taxon	Description	Calibrated (68.2%)	Calibrated (95.4%)
Mai-75013 (feature 75002)	Poz-60352	4820	30	0.7	2.7	3.2	75013	75002	2		1-3	75	Bone	Bos		3650 BC (28.4%) 3631 BC; 3577 BC (2.4%) 3574 BC; 3564 BC (37.4%) 3536 BC	3656 BC (34.8%) 3626 BC; 3598 BC (60.6%) 3526 BC
Mai-77012 (feature 77003)	Poz-60194	4970	35	1.9	5.7	3.4	77012	77003	3	Q	5	77	Bone	Ovis/ Capra		3783 BC (68.2%) 3705 BC	3909 BC (5.1%) 3879 BC; 3802 BC (90.3%) 3657 BC
Mai-79001 (feature 79003)	Poz-60195	4940	30	1.9	3.7	2.3	79001	79003	3		1	79	Bone	Sus		3761 BC (15.6%) 3741 BC; 3731 BC (3.4%) 3726 BC; 3715 BC (49.2%) 3661 BC	3777 BC (95.4%) 3654 BC
Mai-79005a (feature 79002)	Poz-60200	4875	35	1.1	6.7		79005	79002	2		1	79	Bone	Sheep/ goat		3695 BC (21.7%) 3678 BC; 3670 BC (46.5%) 3640 BC	3748 BC (0.3%) 3745 BC; 3713 BC (92.2%) 3632 BC; 3557 BC (2.9%) 3538 BC
Mai-79005b (feature 79002)	Poz-60201	4450	30	2.5	10.1		79005	79002	2		1	79	Bone	Medium mammal		3320 BC (16.3%) 3272 BC; 3266 BC (14.5%) 3236 BC; 3170 BC; (1.8%) 3164 BC; 3114 BC; (14.5%) 3080 BC; 3070 BC; (21.1%) 3025 BC;	3336 BC; (41.7%) 3210 BC;; 3193 BC; (7.9%) 3151 BC; 3139 BC; (45.3%) 3011 BC; 2977 BC (0.4%) 2971 BC; 2948 BC (0.2%) 2945 BC
complex Zh, 1973	Bln-2087	4890	60										Charcoal			3761 BC (7.5%) 3741 BC; 3731 BC (1.9%) 3726 BC; 3715 BC (58.8%) 3636 BC	3893 BC (0.6%) 3883 BC; 3799 BC (84.7%) 3626 BC; 3597 BC (10.0%) 3526 BC

List 1. Continued

Sample name	find character	Number	Weight (g)	Remarks
Mai-50033 (feature 50004)	Bulk find	1	24	^{14}C
Mai-50038 (feature 50004)	Sample	1	1	^{14}C
Mai-50073 (feature 50009)	Sample	1	14	^{14}C
Mai-50130 (feature 50008)	Bulk find	2	48	^{14}C
Mai-50140-1 (feature 50012)	Sample	2	23.5	^{14}C
Mai-50140-2 (feature 50012)	Sample	2	23.5	^{14}C
Mai-50197 (feature 50012)	Single find	1	103	^{14}C
Mai-51464 (feature 51007)	Single find	1	122	^{14}C
Mai-51498 (feature 51007)	Single find	3	37	^{14}C (part)
Mai-51606 (feature 51018)	Single find	1	17	^{14}C
Mai-52029 (feature 52001)	Sample	2	9	^{14}C
Mai-52039 (feature 52001)	Single find	1	97	^{14}C
Mai-52042 (feature 52001)	Bulk find			^{14}C
Mai-52048 (feature 52001)	Bulk find	2	58	^{14}C
Mai-60113 (feature 60002)	Bulk find	4	35	^{14}C (selection)
Mai-60132 (feature 60006)	Sample	1	2	^{14}C
Mai-60145 (feature 60009)	Sample	1	3	^{14}C
Mai-60167 (feature 60009)	Single find	11	330	^{14}C (selection)
Mai-60189 (feature 60009)	Bulk find	18	440	^{14}C (selection)
Mai-72029 (feature 720005)	Sample	1	1	^{14}C
Mai-73008 (feature 730005)	Single find	7	13	^{14}C
Mai-74001 (feature 740003)	Single find	1	14	^{14}C
Mai-75013 (feature 75002)	Bulk find	1	37	^{14}C
Mai-77012 (feature 77003)	Single find	2	4	^{14}C
Mai-79001 (feature 79003)	Sample	1	7	^{14}C

Sample name	Taxon	Element	Side	Epiphyseal Fusion	Fragmatopm	Meas (Bd)	Meas (Bp)	Meas (Glpe)	Dvl	Dvm	Meas (Head)	Modification
Mai-50033 (feature 50004)	Bos	OccipitalCondyle										
Mai-50038 (feature 50004)	Quercus											
Mai-50073 (feature 50009)	Quercus											
Mai-50130 (feature 50008)	Ovis	Femur	Right	FuPx	Px+		54.2				22.6	
Mai-50140-1 (feature 50012)	Fraxinus											
Mai-50140-2 (feature 50012)	Corylus											

Continued

List 1. Continued

Sample name	Taxon	Element	Side	Epiphyseal Fusion	Fragmatopm	Meas (Bd)	Meas (Bp)	Meas (Glpe)	Dvl	Dvm	Meas (Head)	Modification
Mai-50197 (feature 50012)	Bos	Metacarpal	Right		Px+		58.7					Impact fracture,proximal side
Mai-51464 (feature 51007)	Bos	Metacarpal	Left	FuDs	6-	55.1			29.3	30.3		Impact fracture,lateral side
Mai-51498 (feature 51007)	Sus	Mandible										
Mai-51606 (feature 51018)	Sus	Radius	Right	FuPx	Px++		25.4					
Mai-52029 (feature 52001)	Quercus											
Mai-52039 (feature 52001)	Bos	Calcaneum	Right	FuPx	6							
Mai-52042 (feature 52001)	Quercus											
Mai-52048 (feature 52001)	Largemammal	Femur/Humerus			Frag							Impactfracture
Mai-60113 (feature 60002)	Largemammal	Tibia			Frag							
Mai-60132 (feature 60006)	Quercus											
Mai-60145 (feature 60009)	Fraxinus											
Mai-60167 (feature 60009)	Bos	Calcaneum	Right	FuPx	6			141.2				
Mai-60189 (feature 60009)	Bos	Patella	right		6							
Mai-72029 (feature 720005)	Medium Mammal	Long bonefragment										
Mai-73008 (feature 730005)	Ovis/Capra	Lumbarvertebra			6							
Mai-74001 (feature 740003)												
Mai-75013 (feature 75002)	Bos	Ph1		FuPx	6							
Mai-77012 (feature 77003)	Ovis/Capra	Mandible	ascending ramus									
Mai-79001 (feature 79003)	Sus	Tibia		UnDs	Px++	31.1	35.9	70.7				

List 2. Cucuteni-Trypillia ^{14}*C-dates*

LABNR	C14AGE	C14STD	Material	Species	Country	Site	Period	Culture	Phase	Locus
Ki-8086	5520	60	nd	nd	Ukraine	Bilshivtsy	3	C-T	T B1-B2	nd
Hd-19528	4499	24	Bone	Human	Romania	Grumezoaia	5	C-T	H	Inhumation burial
Ki-9623	4840	90	Bone	nd	Ukraine	Grygorivka	3	C-T	T B2	nd
Ki-9749	4830	90	Bone	nd	Ukraine	Grygorivka	3	C-T	T B2	nd
Ki-9622	4800	90	Charcoal	nd	Ukraine	Grygorivka	3	C-T	T B2	nd
Ki-9624	4740	90	Bone	nd	Ukraine	Grygorivka	3	C-T	T B2	nd
Hd-18678	5127	47	Charcoal	nd	Romania	Hancauti I	4	C-T	C B2	1986, H5, Pit 5,-1.30 m
Hd-19426	5106	49	Charcoal	nd	Romania	Hancauti I	4	C-T	C B2	1985, inferour level,-0.90-1.16 m
Hd-17930	4938	42	Charcoal	nd	Romania	Hancauti I	4	C-T	C B2	1986, H5, Pit 4,-1.23-1.50 m
Hd-18936	4884	54	Charcoal	nd	Romania	Hancauti I	4	C-T	C B2	S IV, H6, Pit 8,-1.45-1.58 m
Hd-17959	4621	95	Charcoal	nd	Romania	Hancauti I	5	C-T	H	1986, Surface IV, complexof firing pots no.1, from the oven mouth
Ki-9616	4650	90	Bone	nd	Ukraine	Grygorivka-Ignatenkova Gora	4	C-T	T C1	nd
Ki-11468	4630	90	Nd	nd	Ukraine	Grygorivka-Ignatenkova Gora	4	C-T	T C1	Pit 16
Ki-9614	4590	80	Bone	nd	Ukraine	Grygorivka-Ignatenkova Gora	4	C-T	T C1	nd
Ki-9615	4570	80	Bone	nd	Ukraine	Grygorivka-Ignatenkova Gora	4	C-T	T C1	nd
Ki-9617	4530	80	Bone	nd	Ukraine	Grygorivka-Ignatenkova Gora	4	C-T	T C1	nd
Ki-11469	4520	90	nd	nd	Ukraine	Grygorivka-Ignatenkova Gora	4	C-T	T C1	Pit 6, zr.3
Ki-9613	4520	80	Bone	nd	Ukraine	Grygorivka-Ignatenkova Gora	4	C-T	T C1	nd
Ki-10857	4515	90	nd	nd	Ukraine	Grygorivka-Ignatenkova Gora	4	C-T	T C1	R1,3, zr.2, -0.56 m
Ki-9618	4500	80	Bone	nd	Ukraine	Grygorivka-Ignatenkova Gora	4	C-T	T C1	nd
Ki-10856	4490	80	nd	nd	Ukraine	Grygorivka-Ignatenkova Gora	4	C-T	T C1	R1,3, zr.2,-0.56 m

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List 2. Continued

LABNR	C14AGE	C14STD	Material	Species	Country	Site	Period	Culture	Phase	Locus
Ki-11467	4430	90	nd	nd	Ukraine	Grygorivka-Ignatenkova Gora	4	C-T	T C1	Pit 16, zr.1
Ki-9741	4490	90	nd	nd	Ukraine	Khomyne	4	C-T	T C1	nd
Ki-9740	4470	80	nd	nd	Ukraine	Khomyne	4	C-T	T C1	nd
Ki-9742	4390	90	nd	nd	Ukraine	Khomyne	4	C-T	T C1	nd
Ki-11455	4760	90	nd	nd	Ukraine	Ripnica 6	4	C-T	T C1	S2, Pit 1
Ki-11457	4670	90	nd	nd	Ukraine	Ripnica 6	4	C-T	T C1	S2, Pit 1
Ki-9745	4665	80	nd	nd	Ukraine	Ripnica 6	4	C-T	T C1	S2, Pit 1
Ki-9746	4620	90	nd	nd	Ukraine	Ripnica 6	4	C-T	T C1	S2, Pit 1
Ki-9743	4605	80	nd	nd	Ukraine	Ripnica 6	4	C-T	T C1	Nd
Ki-9744	4590	80	nd	nd	Ukraine	Ripnica 6	4	C-T	T C1	nd
Ki-11456	4580	90	nd	nd	Ukraine	Ripnica 6	4	C-T	T C1	S2, Pit 1
Ki-9747	4570	80	nd	nd	Ukraine	Ripnica 6	4	C-T	T C1	S2, Pit 1
Hd-19373	5163	36	charcoal	nd	Romania	Sofia 8	4	C-T	C B1/ B2	Soundig II, Pit 1,-0.80-0.90m, beam of a platform
Hd-18826	4701	42	Bone	nd	Romania	Sarata Monteoru	4	C-T	C B2	1952, Surface R,-1-1.45 m
Hd-19419	4481	33	Bone	nd	Romania	Sarata Monteoru	4	C-T	C B2	1952, Surface T,-1.45 m
Hd-19573	4440	25	Bone	nd	Romania	Sarata Monteoru	4	C-T	C B2	1952, Surface R, Pit 1,-2 m
Gd-5858	5940	60	Charcoal	nd	Romania	Malnas-Bai	2	Cucuteni	C A2/ A3	Sector D, level I/ II, under the platform of H2
Gd-5861	5880	80	Charcoal	nd	Romania	Malnas-Bai	2	Cucuteni	C A2/ A3	Level I/II, under the platform of H2
Hd-14118	5663	42	charcoal	nd	Romania	Malnas-Bai	2	Cucuteni	C A2/ A3	Sector C, level I-II, under the platform of H2, m.10-11
Hd-14109	5497	100	Charcoal	nd	Romania	Malnas-Bai	2	Cucuteni	C A2/ A3	Secttor C, level II, posthole of H2, m.10-11
Gd-5860	5490	80	Charcoal	nd	Romania	Malnas-Bai	2	Cucuteni	C A2/ A3	Sector B, level I/ II, under the platform of H2
Gd-4682	5420	150	Charcoal	nd	Romania	Malnas-Bai	2	Cucuteni	C A2/ A3	Sector B, Cas.1, level I

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List 2. Continued

LABNR	C14AGE	C14STD	Material	Species	Country	Site	Period	Culture	Phase	Locus
Hd-15082	5407	20	Bone	nd	Romania	Malnas-Bai	2	Cucuteni	C A2/ A3	SII, level II, fireplace 8
Hd-15278	5349	40	Bone	nd	Romania	Malnas-Bai	2	Cucuteni	C A2/ A3	SI, Sector C, level I
Gd-4690	4950	100	Charcoal	nd	Romania	Malnas-Bai	2	Cucuteni	C A2/ A3	Sector B, under the platform of H2, Level I
Bln-2803	5880	150	Grain	Wheat	Romania	Poduri-Dealul Ghindaru	1	Precucuteni	PC 3	nd
Bln-2804	5820	50	Charcoal	nd	Romania	Poduri-Dealul Ghindaru	1	Precucuteni	PC 2	nd
Bln-2782	5780	50	charcoal	nd	Romania	Poduri-Dealul Ghindaru	1	Precucuteni	PC 3	nd
Bln-2783	5690	50	charcoal	nd	Romania	Poduri-Dealul Ghindaru	2	Cucuteni	C A1	nd
Bln-2784	5680	60	Charcoal	nd	Romania	Poduri-Dealul Ghindaru	2	Cucuteni	C A1	nd
Hd-15401	5575	35	Charcoal	nd	Romania	Poduri-Dealul Ghindaru	2	Cucuteni	C A2	J4, H66,-1.85 m
Hd-15324	5529	29	Charcoal	nd	Romania	Poduri-Dealul Ghindaru	2	Cucuteni	C A2	I2, H66,-1.85 m
Bln-2824	5500	60	Charcoal	nd	Romania	Poduri-Dealul Ghindaru	2	Cucuteni	C A2	H2B
Lv-2153	5470	90	Bone	Human	Romania	Poduri-Dealul Ghindaru	2	Cucuteni	C A2	human skull, F1,-1.55 m
Bln-2802	5420	150	Charcoal	nd	Romania	Poduri-Dealul Ghindaru	2	Cucuteni	C A2	H2A
Bln-2805	5400	70	Charcoal	nd	Romania	Poduri-Dealul Ghindaru	2	Cucuteni	C A2	H2B
Hd-15039	5385	37	Grain	nd	Romania	Poduri-Dealul Ghindaru	2	Cucuteni	C A2	nd
Bln-2766	5350	80	Grain	Wheat	Romania	Poduri-Dealul Ghindaru	2	Cucuteni	C A2	H15
Ki-11462	4540	90	nd	nd	Ukraine	Usatovo	5	C-T	T C2	room 5 (?)
Ki-11459	4520	90	nd	nd	Ukraine	Usatovo	5	C-T	T C2	room 2 (?)
Ki-11460	4410	90	nd	nd	Ukraine	Usatovo	5	C-T	T C2	room 3 (?)
Ki-11461	4350	100	nd	nd	Ukraine	Usatovo	5	C-T	T C2	room 4 (?)
UCLA-1642A	4330	60	nd	nd	Ukraine	Usatovo	5	C-T	T C2	nd
Ki-11458	4270	100	nd	nd	Ukraine	Usatovo	5	C-T	T C2	Room 2 (?)
Bln-795	5345	100	Grain	Wheat	Romania	Leca-Ungureni	2	C-T	C A3	nd
Bln-1751	5635	50	Charcoal	nd	Romania	Margineni-Cetatuia	2	C-T	C A2	nd
Bln-1536	5625	50	Charcoal	nd	Romania	Margineni-Cetatuia	2	C-T	C A2	nd
Bln-1534	5610	55	Grain	Wheat	Romania	Margineni-Cetatuia	2	C-T	C A2	nd
Bln-1535	5485	60	Grain	Wheat	Romania	Margineni-Cetatuia	2	C-T	C A2	nd
Ki-369	5580	50	Bone	nd	Romania	Cainara	2	C-T	T B1	nd
Ki-870	4670	100	Charcoal	nd	Ukraine	Mayaki	5	Tripolye	T C2	nd
Ki-9751	4600	90	nd	nd	Ukraine	Mayaki	5	Tripolye	T C2	nd
Ki-282	4580	120	nd	nd	Ukraine	Mayaki	5	Tripolye	T C2	nd
Ki-11464	4530	90	nd	nd	Ukraine	Mayaki	5	Tripolye	T C2	nd

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List 2. Continued

LABNR	C14AGE	C14STD	Material	Species	Country	Site	Period	Culture	Phase	Locus
Ki-9752	4490	90	nd	nd	Ukraine	Mayaki	5	Tripolye	T C2	9,1.36-1.61n, no.8370
Ki-281	4475	130	Charcoal	nd	Ukraine	Mayaki	5	Tripolye	T C2	nd
KiGN-281	4475	130	nd	nd	Ukraine	Mayaki	5	Tripolye	T C2	nd
Ki-11465	4460	90	nd	nd	Ukraine	Mayaki	5	Tripolye	T C2	nd
Bln-629	4400	100	Charcoal	Ulmus	Ukraine	Mayaki	5	Tripolye	T C2	Defensive ditch
UCLA-1642B	4376	60	nd	nd	Ukraine	Mayaki	5	Tripolye	T C2	nd
UCLA-1642G	4375	60	nd	nd	Ukraine	Mayaki	5	Tripolye	T C2	nd
Ki-11463	4370	100	nd	nd	Ukraine	Mayaki	5	Tripolye	T C2	nd
Ki-11466	4360	90	nd	nd	Ukraine	Mayaki	5	Tripolye	T C2	nd
Le-645	4340	60	Charcoal	nd	Ukraine	Mayaki	5	Tripolye	T C2	Defensive ditch
Ki-9753	4180	90	nd	nd	Ukraine	Mayaki	5	Tripolye	T C2	nd
Gd-6387	6320	110	Bone	nd	Romania	Scanteia	2	Cucuteni	C A3	1989, Cassette 3,3, H4,-0.60-0.70 m
Gd-4685	5750	110	Bone	nd	Romania	Scanteia	2	Cucuteni	C A3	1989, Section VI,13,-0.62 m
Hd-14701	5388	18	Bone	Human	Romania	Scanteia	2	Cucuteni	C A3	S VIII, Cassette 1, Grave 1,-0.82 m, child
Hd-14792	5370	26	Bone	Human	Romania	Scanteia	2	Cucuteni	C A3	S VIII, Cassette1, Grave 1,-0.87 m, woman
Hd-16700	5345	51	Bone	nd	Romania	Scanteia	2	Cucuteni	C A3	1992, Section VIII,13, Pit 62,-2.25 m
Gd-6388	5330	110	Bone	nd	Romania	Scanteia	2	Cucuteni	C A3	1989, Section VI,14,-0.55 m
Hd-19572	5280	27	Bone	nd	Romania	Scanteia	2	Cucuteni	C A3	S IX, m.37, Pit 7,-1.20 m
Hd-16701	5205	63	Bone	nd	Romania	Scanteia	2	Cucuteni	C A3	1992, Sectiopn VIII, Cassette 1, 16B-17C,-0.73m under the platform of H8
GrN-5088	4615	35	nd	nd	Moldova	Gorodnytsya-Gorodyshche	5	C-T	T C2	nd
GrN-1985	5340	80	nd	nd	Romania	Habasesti-Holm	2	C-T	C A3	nd
GrN-4424	5530	85	Charcoal	nd	Romania	Tarpesti	1	C-T	PC 3	nd
GrN-1982	4950	60	Grain	Wheat	Romania	Valea Lupului	4	C-T	C B2	nd
Lv-2152	5830	100	Bone	nd	Romania	Targu Frumos	1	C-T	PC 3	pit
Hd-15075	5065	19	Bone	nd	Romania	Cucuteni-Cetatuia	4	C-T	C B2	1961, LIV, CI

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List 2. Continued

LABNR	C14AGE	C14STD	Material	Species	Country	Site	Period	Culture	Phase	Locus
Hd-14817	5423	26	Bone	nd	Romania	Preutesti-Halta	2	C-T	C A3	1978, S1, Pit1,-1.60 m
Le-1054	4600	60	Charcoal	nd	Moldova	Danku 2	5	C-T	H	nd
Hd-14710	5162	37	Bone	nd	Romania	Mihoveni-Cahla Morii	4	C-T	C B1b	1981, S5, Pit 5
Hd-14791	4890	29	Bone	nd	Romania	Mihoveni-Cahla Morii	4	C-T	C B2	1981, S5, m.80-81, H8
Bln-590	5565	100	Charcoal	Fraxinus	Moldova	Novye Ruseshti 1	2	C-T	T B1	nd
UCLA-1642F	4904	300	nd	nd	Ukraine	Novo-Rozanovka	4	C-T	T C1	nd
Le-1392	5990	60	wool	nd	Romania	Iablona 1	3	C-T	C A-B1	nd
Le-4538	5250	75	nd	nd	Romania	Iablona 1	3	C-T	C A-B1	nd
Le-1393	4170	40	Wool	nd	Romania	Iablona 1	3	C-T	C A-B1	nd
Bln-2431	5165	50	Charcoal	nd	Ukraine	Tsipleshty 1	3	C-T	T B2	nd
Bln-2426	5700	55	Charcoal	nd	Romania	Rogozhany 1	1	C-T	PC 3	nd
Bln-2480	4990	60	charcoal	nd	Moldavia	Varvarovka 15	4	C-T	T C1	nd
Ki-601	4370	180	nd	nd	Moldova	Varvarovka 8	4	C-T	T C1	nd
Bln-2447	5595	80	bone	nd	Moldova	Putineshti 3	2	C-T	T B1	nd
Lv-2156	5520	70	Charcoal	nd	Moldova	Putineshti 3	2	C-T	C A4	H3, Cassette 3,-1.70-1.80 m
Hd-19441	5379	32	Charcoal	nd	Moldova	Putineshti 3	2	C-T	C A4	Pit House 4,-2 m
Ki-613	5060	120	Bone	nd	Moldova	Putineshti 3	2	C-T	C A4	nd
Ki-609	4215	110	nd	nd	Moldova	Putineshti 3	2	Cucuteni	C A4	nd
IGAN-712	5730	50	Charcoal	nd	Moldova	Drutsy 1	2	Tripolye	T B1	nd
Ki-11491	5930	80	Bone	nd	Ukraine	Aleksandrovka	1	Early Tripolye	T A	nd
Bln-2428	5390	60	nd	nd	Ukraine	Cuconestii Vechi	2	C-T	C A3	nd
Bln-1060	5355	100	Charcoal	nd	Romania	Draguseni-Ostrov	2	C-T	C A3	nd
Bln-1195	5430	100	Charcoal	nd	Romania	Draguseni-Ostrov	2	C-T	C A4	nd
Hd-14761	5246	24	bone	nd	Romania	Draguseni-Ostrov	3	C-T	C A-B1	1963, e-f, -1-1.10 m
Bln-1194	5205	100	Charcoal	nd	Romania	Draguseni-Ostrov	2	C-T	C A4	nd
Hd-14544	5188	18	Bone	nd	Romania	Draguseni-Ostrov	3	C-T	C A-B1	1961, 6-10
Hd-14831	4996	26	Bone	nd	Romania	Draguseni-Ostrov	3	C-T	C A-B1	1961, complex V,-0.20 m
BM-495	4940	105	nd	nd	Moldova	Soroki-Ozero	4	C-T	T C1	nd
BM-494	4792	105	nd	nd	Moldova	Soroki-Ozero	4	C-T	T C1	nd

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List 2. Continued

LABNR	C14AGE	C14STD	Material	Species	Country	Site	Period	Culture	Phase	Locus
Bln-3191	5700	70	Charcoal	nd	Ukraine	Timkovo	1	Precucuteni	PC 3	nd
Bln-2430	5020	60	nd	nd	Moldova	Brinzeni 4	2	C-T	T B1	nd
Bln-2429	5360	65	Charcoal	nd	Moldova	Brinzeni 8	3	C-T	T B2	nd
Ki-7203	5760	55	nd	nd	Ukraine	Berezovskaya GES	2	C-T	T B1	nd
Ki-7204	5710	60	nd	nd	Ukraine	Berezovskaya GES	2	C-T	T B1	nd
Ki-6683	5860	45	nd	nd	Ukraine	Grenovka	1	C-T	T A	nd
Ki-6682	5800	50	nd	nd	Ukraine	Grenovka	1	C-T	T A	nd
Ki-6656	6200	55	nd	nd	Ukraine	Babshin	1	C-T	T A	nd
Ki-6745	4530	50	Bone	nd	Ukraine	Zhvanets'-Shchovb	5	C-T	T C1-2	Pit House 1
Ki-6743	4480	40	Bone	nd	Ukraine	Zhvanets'-Shchovb	5	C-T	T C1-2	House 2
Ki-6754	4380	60	charcoal	nd	Ukraine	Zhvanets'-Shchovb	5	C-T	T C1-2	nd
Ki-6744	4355	60	Bone	nd	Ukraine	Zhvanets'-Shchovb	5	C-T	T C1-2	Pit House 6
Ki-6753	4290	55	Charcoal	nd	Ukraine	Zhvanets'-Shchovb	5	C-T	T C1-2	Embankment
Ki-6751	3960	50	Bone	Human	Ukraine	Tsviklovtsy	5	C-T	T C2	nd
Ki-11475	6520	90	Pottery	nd	Ukraine	Bernashovka 1	1	C-T	PC 3	nd
Ki-6681	6510	55	nd	nd	Ukraine	Bernashovka 1	1	C-T	PC 3	nd
Ki-11472	6445	90	Pottery	nd	Ukraine	Bernashovka 1	1	C-T	PC 3	nd
Ki-6670	6440	60	nd	nd	Ukraine	Bernashovka 1	1	C-T	PC 3	nd
Ki-6677	6180	60	nd	nd	Ukraine	Voronovitsy	1	C-T	T A	nd
GrN-5134	5440	70	Charcoal	nd	Ukraine	Polivanov Yar 3	2	C-T	T B1	nd
Ki-6675	6270	55	nd	nd	Ukraine	Korman'	1	C-T	T A	nd
Ki-6225	6225	60	nd	nd	Ukraine	Korman'	1	C-T	T A	nd
Ki-6676	6225	60	nd	nd	Ukraine	Korman'	1	C-T	T A	nd
Ki-7202	5805	65	nd	nd	Ukraine	Sabatinovka 1	1	C-T	T A	nd
Ki-6737	6100	55	nd	nd	Ukraine	Sabatinovka 2	1	C-T	T A	nd
Ki-6680	6075	60	nd	nd	Ukraine	Sabatinovka 2	1	C-T	T A	nd
Ki-11447	5620	100	nd	nd	Ukraine	Nezvisko 2	2	C-T	T B1	11/4-11, pottery
Ki-11448	5620	100	nd	nd	Ukraine	Nezvisko 2	2	C-T	T B1	10/D22, pottery
Ki-11446	5605	60	nd	nd	Ukraine	Nezvisko 2	2	C-T	T B1	SI/3a/pottery
Ki-11449	5560	100	nd	nd	Ukraine	Nezvisko 2	2	C-T	T B1	Pottery
Bln-2087	4890	60	Charcoal	nd	Ukraine	Maidanetskoe	4	C-T	T C1	Same sample as Ki-1212

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List 2. *Continued*

LABNR	C14AGE	C14STD	Material	Species	Country	Site	Period	Culture	Phase	Locus
Ki-1212	4600	80	Charcoal	nd	Ukraine	Maidanetskoe	4	C-T	T C1	nd
OxA-19840	5048	44	Charcoal	Fraxinus	Ukraine	Tal'yanki	4	W. Tripolye	T C1	House 41
OxA-22348	5032	31	Charcoal	Quercus	Ukraine	Tal'yanki	4	W. Tripolye	T C1	House 42
Ki-16026	4990	80	Bone	nd	Ukraine	Tal'yanki	4	W. Tripolye	T C1	House 40
OxA-22515	4976	29	Charcoal	Fraxinus	Ukraine	Tal'yanki	4	W. Tripolye	T C1	House 43
Ki-16025	4970	50	Bone	nd	Ukraine	Tal'yanki	4	W. Tripolye	T C1	House 41
Bln-4598	4936	40	nd	nd	Ukraine	Tal'yanki	4	W. Tripolye	T C1	nd
Ki-15993	4910	70	Bone	nd	Ukraine	Tal'yanki	4	W. Tripolye	T C1	House 41
Ki-6867	4810	55	Bone	nd	Ukraine	Tal'yanki	4	W. Tripolye	T C1	House 13/14
Ki-6868	4780	60	Bone	nd	Ukraine	Tal'yanki	4	W. Tripolye	T C1	House 13/14
Ki-6865	4755	50	Bone	nd	Ukraine	Tal'yanki	4	W. Tripolye	T C1	House 13/14
Ki-6866	4720	60	Bone	nd	Ukraine	Tal'yanki	4	W. Tripolye	T C1	House 13/14
Ki-15994	4550	70	Bone	nd	Ukraine	Tal'yanki	4	W. Tripolye	T C1	House 40
Ki-6671	6330	65	nd	nd	Ukraine	Okopi	1	Early Tripolye	T A	nd
Ki-6165	6165	55	nd	nd	Ukraine	Grebenyukov Yar	1	Early Tripolye	T A	nd
Ki-6673	6120	50	nd	nd	Ukraine	Grebenyukov Yar	1	Early Tripolye	T A	nd
Ki-6672	6040	65	nd	nd	Ukraine	Grebenyukov Yar	1	Early Tripolye	T A	nd
Ki-6684	5905	60	nd	nd	Ukraine	Luka Vrublevetskaya	1	Early Tripolye	T A	nd
Ki-6685	5845	50	nd	nd	Ukraine	Luka Vrublevetskaya	1	Early Tripolye	T A	nd
Bln-2137	5180	65	nd	nd	Ukraine	Veseliy Kut	3	E. Tripolye	T B1-B2	nd
Ki-903	5100	100	Charcoal	nd	Ukraine	Veseliy Kut	3	E. Tripolye	T B1-B2	nd
Ki-11450	4300	90	nd	nd	Ukraine	Ol'khovets 1	5	W. Tripolye	T C1-2	1993, Pit 1
Ki-11454	4280	90	nd	nd	Ukraine	Ol'khovets 1	5	W. Tripolye	T C1-2	1993, Pit 1
Ki-11452	4250	90	nd	nd	Ukraine	Ol'khovets 1	5	W. Tripolye	T C1-2	1993, Pit 1
Ki-10859	4240	90	nd	nd	Ukraine	Ol'khovets 1	5	W. Tripolye	T C1-2	1993, H1
Ki-6925	4225	55	Bone	nd	Ukraine	Ol'khovets 1	5	W. Tripolye	T C1-2	Pit 1
Ki-6924	4205	50	Bone	nd	Ukraine	Ol'khovets 1	5	W. Tripolye	T C1-2	Pit 1
Ki-10858	4190	90	nd	nd	Ukraine	Ol'khovets 1	5	W. Tripolye	T C1-2	1993, H1
Ki-9754	4190	80	nd	nd	Ukraine	Ol'khovets 1	5	W. Tripolye	T C1-2	1993, H1

Continued

List 2. Continued

LABNR	C14AGE	C14STD	Material	Species	Country	Site	Period	Culture	Phase	Locus
Ki-11451	4170	90	nd	nd	Ukraine	Ol'khovets 1	5	W. Tripolye	T C1-2	Pit 1
Ki-6922	4170	55	bone	nd	Ukraine	Ol'khovets 1	5	W. Tripolye	T C1-2	Pit 1
Ki-6923	4165	60	bone	nd	Ukraine	Ol'khovets 1	5	W. Tripolye	T C1-2	Pit 1
Ki-11453	4130	90	nd	nd	Ukraine	Ol'khovets 1	5	W. Tripolye	T C1-2	Pit 1
Ki-9625	4110	80	nd	nd	Ukraine	Ol'khovets 1	5	W. Tripolye	T C1-2	1993, H1, room 1
Le-1060	5100	50	Charcoal	nd	Ukraine	Klishchev	3	C-T	T B1-B2	nd
Ki-11488	4720	60	nd	nd	Ukraine	Zelena Dibrova	4	C-T	T C1	nd
Ki-882	5310	160	nd	nd	Ukraine	Krasnostavka	2	C-T	T B1	nd
Ki-11490	4780	70	nd	nd	Ukraine	Khutir Nezamoznyk	4	W. Tripolye	T C1	nd
Ki-11489	4910	70	nd	nd	Ukraine	Ol'shana	4	W. Tripolye	T C1	nd
Hd-14785	4495	18	Bone	nd	Moldova	Horodistea	5	Late Tripolye/ Horodistea-Foltesti	H 1	S.L.,-1.50-1.70 m
Hd-15024	4377	21	Bone	nd	Moldova	Horodistea	5	Late Tripolye/ Horodistea-Foltesti	H 2	1969, S.L., H1
Hd-14898	4235	30	Bone	nd	Moldova	Horodistea	5	Late Tripolye/ Horodistea-Foltesti	H 2	S.L., H1
Ki-874	5770	120	nd	nd	Ukraine	Miropole	3	C-T	T B2	nd
Ki-1204	4700	90	Charcoal	nd	Ukraine	Shkarovka	2	C-T	T B1-B2	Platform 1
Ki-520	5015	105	nd	nd	Ukraine	Shkarovka	3	C-T	T B1-B2	nd
Bln-2088	4940	95	nd	nd	Ukraine	Shkarovka	3	C-T	T B1-B2	nd
Ki-2088	4940	95	nd	nd	Ukraine	Shkarovka	3	C-T	T B1-B2	nd
Ki-875	4840	95	nd	nd	Ukraine	Shkarovka	3	C-T	T B1-B2	nd
Ki-879	4710	130	nd	nd	Ukraine	Shkarovka	3	C-T	T B1-B2	nd
Ki-877	4690	80	nd	nd	Ukraine	Shkarovka	3	C-T	T B1-B2	nd
Ki-881	4620	100	nd	nd	Ukraine	Shkarovka	3	C-T	T B1-B2	nd
Ki-201	4320	170	nd	nd	Ukraine	Shkarovka	3	C-T	T B1-B2	nd

Continued

List 2. Continued

LABNR	C14AGE	C14STD	Material	Species	Country	Site	Period	Culture	Phase	Locus
Ki-6747	4210	45	bone	nd	Ukraine	Sandraky	5	C-T	T C2	3-7, cavity
Ki-6746	4175	50	Bone	nd	Ukraine	Sandraky	5	C-T	T C2	Bones on fireplace, 3-7
Ki-11486	4850	70	nd	nd	Ukraine	Pekari 2	4	C-T	T C1	nd
Ki-11487	4805	70	nd	nd	Ukraine	Pekari 2	4	C-T	T C1	nd
Ki-7207	5140	60	Bone	nd	Ukraine	Grebeni	3	C-T	T B2	nd
Ki-7205	5120	65	Bone	nd	Ukraine	Grebeni	3	C-T	T B2	nd
Ki-7208	5100	90	Bone	nd	Ukraine	Grebeni	3	C-T	T B2	nd
Ki-7206	5080	70	Bone	nd	Ukraine	Grebeni	3	C-T	T B2	nd
Ki-6750	4430	45	Bone	nd	Ukraine	Troyaniv	5	C-T	T C2	SIII, LV-b-7. House 25
Ki-6749	4410	50	Bone	nd	Ukraine	Troyaniv	5	C-T	T C2	House, XIII-19
Ki-6748	4360	55	Bone	nd	Ukraine	Troyaniv	5	C-T	T C2	House 28, LXXII-2, S18
Ki-5012	4320	70	Burnt bone	Human	Ukraine	Sofievka	5	E. Tripolye	T C2	Cemetery, Grave 1
Ki-5029	4300	45	Bone	nd	Ukraine	Sofievka	5	E. Tripolye	T C2	Cemetery
Ki-5013	4270	90	nd	nd	Ukraine	Sofievka	5	E. Tripolye	T C2	cemetery, Grave 11
Bln-631	4870	100	Charcoal	Fraxinus	Ukraine	Chapaevka	4	E. Tripolye	T C1	nd
Ki-880	4810	140	Charcoal	nd	Ukraine	Chapaevka	4	E. Tripolye	T C1	nd
Ki-5038	4280	110	Bone	Human	Ukraine	Chervony khutor	5	E. Tripolye	T C1-2	Cemetery, Grave 2
Ki-5039	4160	90	Bone	Human	Ukraine	Chervony khutor	5	E. Tripolye	T C1-2	Cemetery, Grave 98
Ki-5016	4140	110	Nd	nd	Ukraine	Chervony khutor	5	E. Tripolye	T C1-2	cemetery, Grave 6
UCLA-1671B	4890	60	nd	nd	Ukraine	Evminka 1	4	E. Tripolye	T C1	nd
UCLA-1466B	4790	100	nd	nd	Ukraine	Evminka 1	4	E. Tripolye	T C1	nd
Ki-5015	4290	90	nd	nd	Ukraine	Zavalovka	5	E. Tripolye	T C2	Cemetery, Grave 6
Ki-5014	4230	80	Bone	Human	Ukraine	Zavalovka	5	E. Tripolye	T C2	Cemetery, Grave 10
GrN-5099	4615	35	nd	nd	Ukraine	Gorods'k	5	Late Tripolye	T C2	nd
Ki-6752	4495	45	shell	nd	Ukraine	Gorods'k	5	Late Tripolye	T C2	nd
Ki-11862	4520	70	Bone	nd	Ukraine	Sharyn	5	W. Tripolye	T C1-2	Uman district, Cherkasy region, Yatran river, 2003, site 4, dug-out 3

Continued

List 2. Continued

LABNR	C14AGE	C14STD	Material	Species	Country	Site	Period	Culture	Phase	Locus
Ki-12050	4575	60	Burnt bone	nd	Ukraine	Sharyn	5	W. Tripolye	T C1-2	Uman district, Cherkasy region, Yatran river, 2003, site 5, dwelling 2
Ki-11866	4530	80	Clay	nd	Ukraine	Sharyn	5	W. Tripolye	T C1-2	Uman district, Cherkasy region, Yatran river, 2003, site 5, dwelling 2
Ki-11867	4590	80	Clay	nd	Ukraine	Sharyn	5	W. Tripolye	T C1-2	Uman District, Cherkasy region, Yatran river, 2003, site 5, dwelling 2
Ki-11868	4520	80	Clay	nd	Ukraine	Sharyn	5	W. Tripolye	T C1-2	Uman district, Cherkasy region, Yatran river, 2003, site 5, dwelling 2
Ki-11869	4670	80	Clay	nd	Ukraine	Sharyn	5	W. Tripolye	T C1-2	Uman district, Cherkasy region, Yatran river, 2003, site 5, dwelling 2
Ki-9740	4470	80	Bone	nd	Ukraine	Rzhyschev-Ripnitsa	4	C-T	T C1	nd
Ki-9741	4490	90	Bone	nd	Ukraine	Rzhyschev-Ripnitsa	4	C-T	T C1	nd
Ki-9742	4390	90	Bone	nd	Ukraine	Rzhyschev-Ripnitsa	4	C-T	T C1	nd
Ki-9743	4605	80	bone	nd	Ukraine	Rzhyschev-Ripnitsa	4	C-T	T C1	nd
Ki-9744	4590	80	Bone	nd	Ukraine	Rzhyschev-Ripnitsa	4	C-T	T C1	nd
Ki-9745	4565	80	Bone	nd	Ukraine	Rzhyschev-Ripnitsa	4	C-T	T C1	nd
Ki-9746	4620	90	Bone	nd	Ukraine	Rzhyschev-Ripnitsa	4	C-T	T C1	nd
Ki-9747	4570	80	Bone	nd	Ukraine	Rzhyschev-Ripnitsa	4	C-T	T C1	nd

List 2. Continued

Labnr	Latitude	Longitude	Reference	Notice	Context	Duration	Quality	Incongr	Region	Megaregion	Database	Id
Ki-8086			Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Hd-19528			Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-9623			Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-9749			Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-9622			Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-9624			Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Hd-18678			Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Hd-19426			Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Hd-17930			Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Hd-18936			Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Hd-17959			Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-9616			Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-11468			Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-9614			Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-9615			Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-9617			Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-11469			Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-9613			Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-10857			Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-9618			Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-10856			Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-11467			Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-9741			Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-9740			Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-9742			Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-11455			Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-11457			Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-9745			Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-9746			Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-9743			Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-9744			Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-11456			Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-9747			Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Hd-19373			Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Hd-18826	45.15	26.63	Lazarovici (2010)	–	–	–	–	–	–	–	–	–

Continued

List 2. Continued

Labnr	Latitude	Longitude	Reference	Notice	Context	Duration	Quality	Incongr	Region	Megaregion	Database	Id
Hd-19419	45.15	26.63	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Hd-19573	45.15	26.63	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Gd-5858	46.03	25.82	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Gd-5861	46.03	25.82	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Hd-14118	46.03	25.82	Laszlo (1997)	–	–	–	–	–	–	–	–	–
Hd-14109	46.03	25.82	Laszlo (1997)	–	–	–	–	–	–	–	–	–
Gd-5860	46.03	25.82	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Gd-4682	46.03	25.82	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Hd-15082	46.03	25.82	Laszlo (1997)	–	–	–	–	–	–	–	–	–
Hd-15278	46.03	25.82	Laszlo (1997)	–	–	–	–	–	–	–	–	–
Gd-4690	46.03	25.82	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Bln-2803	46.49	26.53	Mantu (2000)	–	–	–	–	–	–	–	–	–
Bln-2804	46.49	26.53	Mantu (2000)	–	–	–	–	–	–	–	–	–
Bln-2782	46.49	26.53	Mantu (2000)	–	–	–	–	–	–	–	–	–
Bln-2783	46.49	26.53	Laszlo (1997)	–	–	–	–	–	–	–	–	–
Bln-2784	46.49	26.53	Laszlo (1997)	–	–	–	–	–	–	–	–	–
Hd-15401	46.49	26.53	Laszlo (1997)	–	–	–	–	–	–	–	–	–
Hd-15324	46.49	26.53	Laszlo (1997)	–	–	–	–	–	–	–	–	–
Bln-2824	46.49	26.53	Laszlo (1997)	–	–	–	–	–	–	–	–	–
Lv-2153	46.49	26.53	Mantu (1998)	–	–	–	–	–	–	–	–	–
Bln-2802	46.49	26.53	Laszlo (1997)	–	–	–	–	–	–	–	–	–
Bln-2805	46.49	26.53	Laszlo (1997)	–	–	–	–	–	–	–	–	–
Hd-15039	46.49	26.53	Laszlo (1997)	–	–	–	–	–	–	–	–	–
Bln-2766	46.49	26.53	Laszlo (1997)	–	–	–	–	–	–	–	–	–
Ki-11462	46.54	30.66	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-11459	46.54	30.66	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-11460	46.54	30.66	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-11461	46.54	30.66	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
UCLA-1642A	46.54	30.66	Telegin et al. (2003)	–	–	–	–	–	–	–	–	–
Ki-11458	46.54	30.66	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Bln-795	46.55	27.13	Laszlo (1997)	–	–	–	–	–	–	–	–	–
Bln-1751	46.58	26.86	Laszlo (1997)	–	–	–	–	–	–	–	–	–
Bln-1536	46.58	26.86	Laszlo (1997)	–	–	–	–	–	–	–	–	–
Bln-1534	46.58	26.86	Laszlo (1997)	–	–	–	–	–	–	–	–	–
Bln-1535	46.58	26.86	Laszlo (1997)	–	–	–	–	–	–	–	–	–

Continued

List 2. Continued

Labnr	Latitude	Longitude	Reference	Notice	Context	Duration	Quality	Incongr	Region	Megaregion	Database	Id
Ki-369	46.68	29.05	Ivanova (2008)	–	–	–	–	–	–	–	–	–
Ki-870	46.70	30.94	Telegin et al. (2003)	–	–	–	–	–	–	–	–	–
Ki-9751	46.70	30.94	Lazarovici (2010) + pers. comm.	–	–	–	–	–	–	–	–	–
Ki-282	46.70	30.94	Lazarovici; Patokova et al. (1989)	–	–	–	–	–	–	–	–	–
Ki-11464	46.70	30.94	Lazarovici (2010) + pers. comm.	–	–	–	–	–	–	–	–	–
Ki-9752	46.70	30.94	Lazarovici (2010) + pers. comm.	–	–	–	–	–	–	–	–	–
Ki-281	46.70	30.94	Lazarovici (2010) + pers. comm.	–	–	–	–	–	–	–	–	–
KiGN-281	46.70	30.94	Patokova et al. (1989); Telegin (2003)	–	–	–	–	–	–	–	–	–
Ki-11465	46.70	30.94	Lazarovici (2010) + pers. comm.	–	–	–	–	–	–	–	–	–
Bln-629	46.70	30.94	Quitta and Kohl (1969); Telegin (2003)	–	–	–	–	–	–	–	–	–
UCLA-1642B	46.70	30.94	Telegin et al. (2003)	–	–	–	–	–	–	–	–	–
UCLA-1642G	46.70	30.94	Telegin et al. (2003)	–	–	–	–	–	–	–	–	–
Ki-11463	46.70	30.94	Lazarovici (2010) + pers. comm.	–	–	–	–	–	–	–	–	–
Ki-11466	46.70	30.94	Lazarovici (2010) + pers. comm.	–	–	–	–	–	–	–	–	–
Le-645	46.70	30.94	Sementsov et al. (1969); Lazarovici	–	–	–	–	–	–	–	–	–
Ki-9753	46.70	30.94	Lazarovici (2010) + pers. comm.	–	–	–	–	–	–	–	–	–
Gd-6387	46.91	27.59	Lazarovici (2010) + pers. comm.	–	–	–	–	–	–	–	–	–
Gd-4685	46.91	27.59	Lazarovici (2010) + pers. comm.	–	–	–	–	–	–	–	–	–
Hd-14701	46.91	27.59	Ivanova (2008)	–	–	–	–	–	–	–	–	–
Hd-14792	46.91	27.59	Ivanova (2008)	–	–	–	–	–	–	–	–	–
Hd-16700	46.91	27.59	Lazarovici (2010) + pers. comm.	–	–	–	–	–	–	–	–	–
Gd-6388	46.91	27.59	Lazarovici (2010) + pers. comm.	–	–	–	–	–	–	–	–	–
Hd-19572	46.91	27.59	Lazarovici (2010) + pers. comm.	–	–	–	–	–	–	–	–	–

Continued

List 2. *Continued*

Labnr	Latitude	Longitude	Reference	Notice	Context	Duration	Quality	Incongr	Region	Megaregion	Database	Id
Hd-16701	46.91	27.59	Lazarovici (2010) + pers. comm.	–	–	–	–	–	–	–	–	–
GrN-5088	46.95	29.76	Telegin et al. (2003)	–	–	–	–	–	–	–	–	–
GrN-1985	47.15	26.96	Laszlo (1997)	–	–	–	–	–	–	–	–	–
GrN-4424	47.17	26.45	Mantu (2000)	–	–	–	–	–	–	–	–	–
GrN-1982	47.18	27.50	Laszlo (1997)	–	–	–	–	–	–	–	–	–
Lv-2152	47.21	27.01	Mantu (2000)	–	–	–	–	–	–	–	–	–
Hd-15075	47.30	26.92	Laszlo (1997)	–	–	–	–	–	–	–	–	–
Hd-14817	47.46	26.42	Laszlo (1997)	–	–	–	–	–	–	–	–	–
Le-1054	47.66	27.96	Dergachev (1980); Telegin (2003)	–	–	–	–	–	–	–	–	–
Hd-14710	47.68	26.17	Laszlo (1997)	–	–	–	–	–	–	–	–	–
Hd-14791	47.68	26.17	Laszlo (1997)	–	–	–	–	–	–	–	–	–
Bln-590	47.69	28.53	Quitta and Kohl (1969);Kohl (1970); Telegin(2003)	–	–	–	–	–	–	–	–	–
UCLA-1642F	47.79	32.38	Telegin et al. (2003)	–	–	–	–	–	–	–	–	–
Le-1392	47.80	27.62	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Le-4538	47.80	27.62	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Le-1393	47.80	27.62	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Bln-2431	47.83	28.14	Mantu (1998); Telegin et al. (2003);Rassamakin (2004)	–	–	–	–	–	–	–	–	–
Bln-2426	47.83	28.42	Mantu (2000)	–	–	–	–	–	–	–	–	–
Bln-2480	47.84	28.82	Telegin et al. (2003)	–	–	–	–	–	–	–	–	–
Ki-601	47.84	28.82	Telegin et al. (2003)	–	–	–	–	–	–	–	–	–
Bln-2447	47.97	28.02	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Lv-2156	47.97	28.02	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Hd-19441	47.97	28.02	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-613	47.97	28.02	Telegin et al. (2003)	–	–	–	–	–	–	–	–	–
Ki-609	47.97	28.02	Boyadziev (1998)	–	–	–	–	–	–	–	–	–
IGAN-712	47.97	27.29	Kremenetski (1991); Zbenovich (1996)	–	–	–	–	–	–	–	–	–
Ki-11491	47.99	29.23	Lazarovici (2010); Palaguta (2007)	–	–	–	–	–	–	–	–	–
Bln-2428	48.00	27.18	Telegin et al. (2003)	–	–	–	–	–	–	–	–	–
Bln-1060	48.01	26.81	Laszlo (1997)	–	–	–	–	–	–	–	–	–
Bln-1195	48.01	26.81	Laszlo (1997)	–	–	–	–	–	–	–	–	–
Hd-14761	48.01	26.81	Laszlo (1997)	–	–	–	–	–	–	–	–	–

Continued

List 2. *Continued*

Labnr	Latitude	Longitude	Reference	Notice	Context	Duration	Quality	Incongr	Region	Megaregion	Database	Id
Bln-1194	48.01	26.81	Laszlo (1997)	–	–	–	–	–	–	–	–	–
Hd-14544	48.01	26.81	Laszlo (1997)	–	–	–	–	–	–	–	–	–
Hd-14831	48.01	26.81	Laszlo (1997)	–	–	–	–	–	–	–	–	–
BM-495	48.01	28.64	Telegin et al. (2003)	–	–	–	–	–	–	–	–	–
BM-494	48.01	28.64	Telegin et al. (2003)	–	–	–	–	–	–	–	–	–
Bln-3191	48.11	29.30	Patokova et al. (1989); Telegin (2003)	–	–	–	–	–	–	–	–	–
Bln-2430	48.29	27.49	Telegin et al. (2003)	–	–	–	–	–	–	–	–	–
Bln-2429	48.29	27.49	Lazarovici (2010); Telegin (2003)	–	–	–	–	–	–	–	–	–
Ki-7203	48.34	29.82	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-7204	48.34	29.82	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-6683	48.45	30.26	Telegin et al. (2003)	–	–	–	–	–	–	–	–	–
Ki-6682	48.45	30.26	Telegin et al. (2003)	–	–	–	–	–	–	–	–	–
Ki-6656	48.47	26.56	Telegin et al. (2003)	–	–	–	–	–	–	–	–	–
Ki-6745	48.55	26.49	Lazarovici (2010); Rassamakin (2004)	–	–	–	–	–	–	–	–	–
Ki-6743	48.55	26.49	Lazarovici (2010); Rassamakin (2004)	–	–	–	–	–	–	–	–	–
Ki-6754	48.55	26.49	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-6744	48.55	26.49	Lazarovici (2010); Rassamakin (2004)	–	–	–	–	–	–	–	–	–
Ki-6753	48.55	26.49	Lazarovici (2010); Rassamakin (2004)	–	–	–	–	–	–	–	–	–
Ki-6751	48.58	26.63	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-11475	48.58	27.48	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-6681	48.58	27.48	Telegin et al. (2003)	–	–	–	–	–	–	–	–	–
Ki-11472	48.58	27.48	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-6670	48.58	27.48	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-6677	48.67	26.87	Telegin (2003); Lazarovici	–	–	–	–	–	–	–	–	–
GrN-5134	48.67	27.67	Telegin (2003)	–	–	–	–	–	–	–	–	–
Ki-6675	48.70	27.30	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-6225	48.70	27.30	Telegin et al. (2003)	–	–	–	–	–	–	–	–	–
Ki-6676	48.70	27.30	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-7202	48.74	29.88	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-6737	48.74	29.88	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-6680	48.74	29.88	Lazarovici (2010)	–	–	–	–	–	–	–	–	–

Continued

List 2. Continued

Labnr	Latitude	Longitude	Reference	Notice	Context	Duration	Quality	Incongr	Region	Megaregion	Database	Id
Ki-11447	48.78	25.27	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-11448	48.78	25.27	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-11446	48.78	25.27	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-11449	48.78	25.27	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Bln-2087	48.80	30.69	Telegin et al. (2003)	–	–	–	–	–	–	–	–	–
Ki-1212	48.80	30.69	Telegin et al. (2003)	–	–	–	–	–	–	–	–	–
OxA-19840	48.80	30.53	Rassamakin & Menotti (2011)	–	–	–	–	–	–	–	–	–
OxA-22348	48.80	30.53	Rassamakin & Menotti (2011)	–	–	–	–	–	–	–	–	–
Ki-16026	48.80	30.53	Rassamakin & Menotti (2011)	–	–	–	–	–	–	–	–	–
OxA-22515	48.80	30.53	Rassamakin & Menotti (2011)	–	–	–	–	–	–	–	–	–
Ki-16025	48.80	30.53	Rassamakin & Menotti (2011)	–	–	–	–	–	–	–	–	–
Bln-4598	48.80	30.53	Kruts (2008)	–	–	–	–	–	–	–	–	–
Ki-15993	48.80	30.53	Rassamakin & Menotti (2011)	–	–	–	–	–	–	–	–	–
Ki-6867	48.80	30.53	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-6868	48.80	30.53	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-6865	48.80	30.53	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-6866	48.80	30.53	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-15994	48.80	30.53	Rassamakin & Menotti (2011)	–	–	–	–	–	–	–	–	–
Ki-6671	48.86	26.92	Telegin et al. (2003)	–	–	–	–	–	–	–	–	–
Ki-6165	48.87	30.82	Telegin et al. (2003)	–	–	–	–	–	–	–	–	–
Ki-6673	48.87	30.82	Telegin et al. (2003)	–	–	–	–	–	–	–	–	–
Ki-6672	48.87	30.82	Telegin et al. (2003)	–	–	–	–	–	–	–	–	–
Ki-6684	48.96	26.72	Telegin et al. (2003)	–	–	–	–	–	–	–	–	–
Ki-6685	48.96	26.72	Telegin et al. (2003)	–	–	–	–	–	–	–	–	–
Bln-2137	48.97	30.64	Kruts (2008)	–	–	–	–	–	–	–	–	–
Ki-903	48.97	30.64	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-11450	49.04	30.85	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-11454	49.04	30.85	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-11452	49.04	30.85	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-10859	49.04	30.85	Lazarovici (2010)	–	–	–	–	–	–	–	–	–

Continued

List 2. Continued

Labnr	Latitude	Longitude	Reference	Notice	Context	Duration	Quality	Incongr	Region	Megaregion	Database	Id
Ki-6925	49.04	30.85	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-6924	49.04	30.85	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-10858	49.04	30.85	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-9754	49.04	30.85	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-11451	49.04	30.85	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-6922	49.04	30.85	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-6923	49.04	30.85	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-11453	49.04	30.85	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-9625	49.04	30.85	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Le-1060	49.11	28.80	Zaets and Ryzhov (1993); Ivanova (2008)	–	–	–	–	–	–	–	–	–
Ki-11488	49.13	31.21	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-882	49.18	30.79	Telegin et al. (2003)	–	–	–	–	–	–	–	–	–
Ki-11490	49.19	31.24	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-11489	49.22	31.22	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Hd-14785	49.29	31.46	Laszlo (1997)	–	–	–	–	–	–	–	–	–
Hd-15024	49.29	31.46	Laszlo (1997)	–	–	–	–	–	–	–	–	–
Hd-14898	49.29	31.46	Laszlo (1997)	–	–	–	–	–	–	–	–	–
Ki-874	49.38	31.32	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-1204	49.48	30.54	Telegin et al. (2003)	–	–	–	–	–	–	–	–	–
Ki-520	49.48	30.54	Telegin et al. (2003)	–	–	–	–	–	–	–	–	–
Bln-2088	49.48	30.54	Kruts (2008)	–	–	–	–	–	–	–	–	–
Ki-2088	49.48	30.54	Telegin et al. (2003)	–	–	–	–	–	–	–	–	–
Ki-875	49.48	30.54	Telegin et al. (2003)	–	–	–	–	–	–	–	–	–
Ki-879	49.48	30.54	Telegin et al. (2003)	–	–	–	–	–	–	–	–	–
Ki-877	49.48	30.54	Telegin et al. (2003)	–	–	–	–	–	–	–	–	–
Ki-881	49.48	30.54	Telegin et al. (2003)	–	–	–	–	–	–	–	–	–
Ki-201	49.48	30.54	Telegin et al. (2003)	–	–	–	–	–	–	–	–	–
Ki-6747	49.55	27.95	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-6746	49.55	27.95	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-11486	49.70	31.55	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-11487	49.70	31.55	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-7207	50.02	30.97	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-7205	50.02	30.97	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-7208	50.02	30.97	Lazarovici (2010)	–	–	–	–	–	–	–	–	–

Continued

List 2. Continued

Labnr	Latitude	Longitude	Reference	Notice	Context	Duration	Quality	Incongr	Region	Megaregion	Database	Id
Ki-7206	50.02	30.97	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-6750	50.11	28.52	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-6749	50.11	28.52	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-6748	50.11	28.52	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-5012	50.22	31.51	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-5029	50.22	31.51	Telegin et al. (2003)	–	–	–	–	–	–	–	–	–
Ki-5013	50.22	31.51	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Bln-631	50.30	31.19	Quitta and Kohl (1969); Telegin et al. (2003)	–	–	–	–	–	–	–	–	–
Ki-880	50.30	31.19	Telegin et al. (2003)	–	–	–	–	–	–	–	–	–
Ki-5038	50.30	31.19	Telegin et al. (2003)	–	–	–	–	–	–	–	–	–
Ki-5039	50.30	31.19	Telegin et al. (2003)	–	–	–	–	–	–	–	–	–
Ki-5016	50.30	31.19	Telegin et al. (2003)	–	–	–	–	–	–	–	–	–
UCLA-1671B	50.84	30.83	Telegin et al. (2003)	–	–	–	–	–	–	–	–	–
UCLA-1466B	50.84	30.83	Telegin et al. (2003)	–	–	–	–	–	–	–	–	–
Ki-5015	50.85	30.58	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-5014	50.85	30.58	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
GrN-5099	50.90	29.59	Telegin et al. (2003)	–	–	–	–	–	–	–	–	–
Ki-6752	50.90	29.59	Lazarovici (2010)	–	–	–	–	–	–	–	–	–
Ki-11862			Rassamakin (2012)	–	–	–	–	–	–	–	–	–
Ki-12050			Rassamakin (2012)	–	–	–	–	–	–	–	–	–
Ki-11866			Rassamakin (2012)	–	–	–	–	–	–	–	–	–
Ki-11867			Rassamakin (2012)	–	–	–	–	–	–	–	–	–
Ki-11868			Rassamakin (2012)	–	–	–	–	–	–	–	–	–
Ki-11869			Rassamakin (2012)	–	–	–	–	–	–	–	–	–
Ki-9740			Rassamakin (2012)	–	–	–	–	–	–	–	–	–
Ki-9741			Rassamakin (2012)	–	–	–	–	–	–	–	–	–
Ki-9742			Rassamakin (2012)	–	–	–	–	–	–	–	–	–
Ki-9743			Rassamakin (2012)	–	–	–	–	–	–	–	–	–
Ki-9744			Rassamakin (2012)	–	–	–	–	–	–	–	–	–
Ki-9745			Rassamakin (2012)	–	–	–	–	–	–	–	–	–
Ki-9746			Rassamakin (2012)	–	–	–	–	–	–	–	–	–
Ki-9747			Rassamakin (2012)	–	–	–	–	–	–	–	–	–

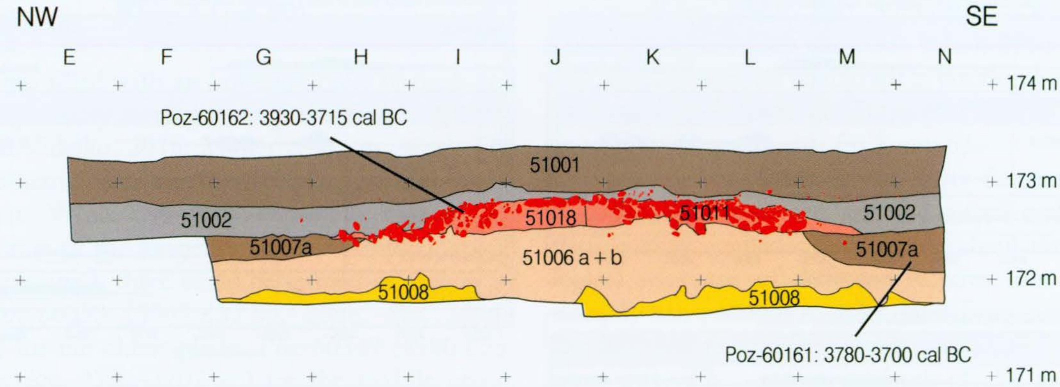

Figure 2. *The short profile of house 44. The layers are described in the text, the location of the* ^{14}*C-samples that date* termini ad quem *are marked (graphics: R. Hofmann, UFG Kiel).*

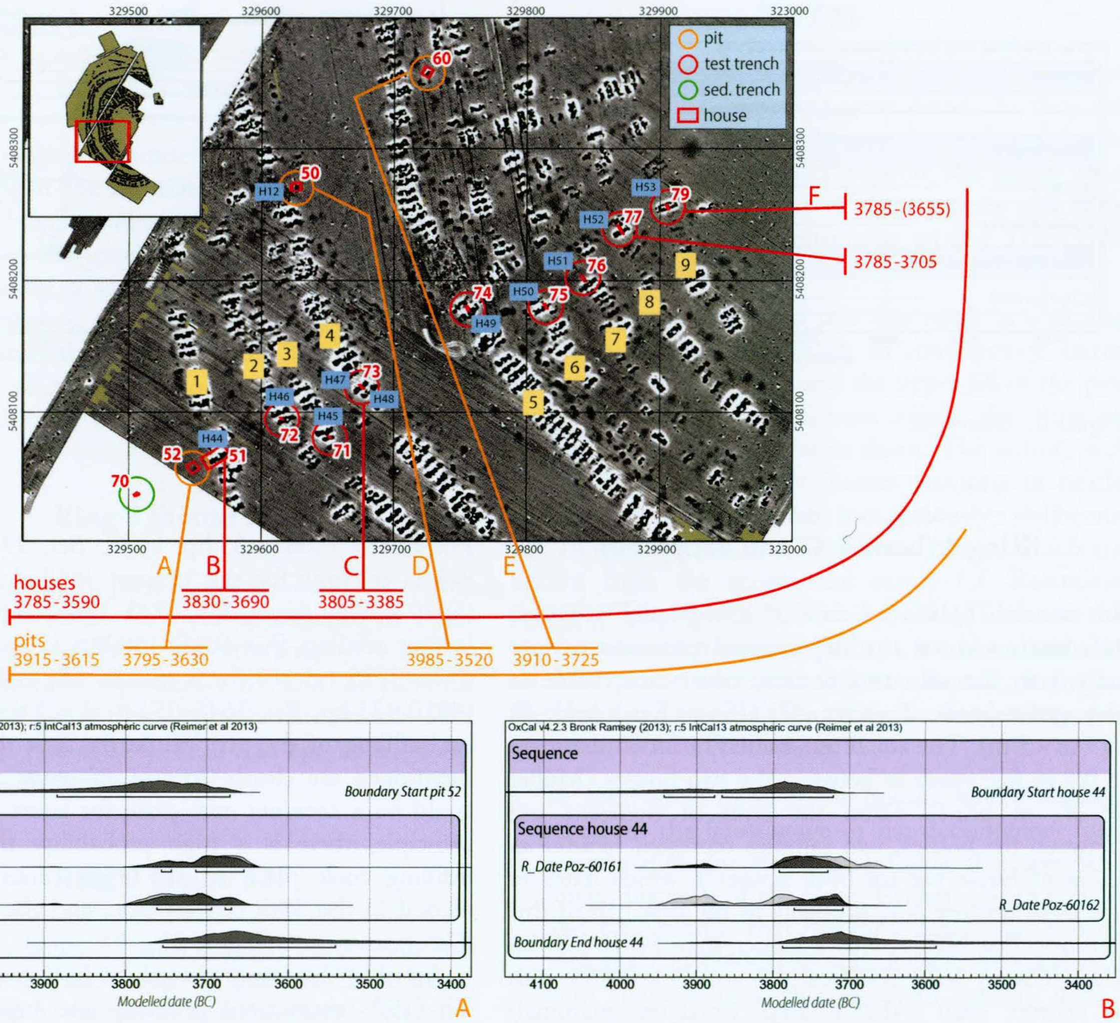

Figure 3. *Modelling of* ^{14}*C-dates from Maidanetske. The sequential calibration of 6 groups of dates, which are related to different houses and pits, indicates the most probable chronological timeframe for the features. While for house 44, pit 50, and pit 60 the stratigraphic order of the samples could be integrated in the calculation, in all other cases phases were indicated by* ^{14}*C-dates of non-stratigraphic order. The median of each boundary calculation was used to display the most probable range for the dates in relation to their spatial order (cf. Müller et al., 2014; Bronk Ramsey, 2009; Reimer et al., 2013); Graphic: Karin Winter, UFG Kiel.*

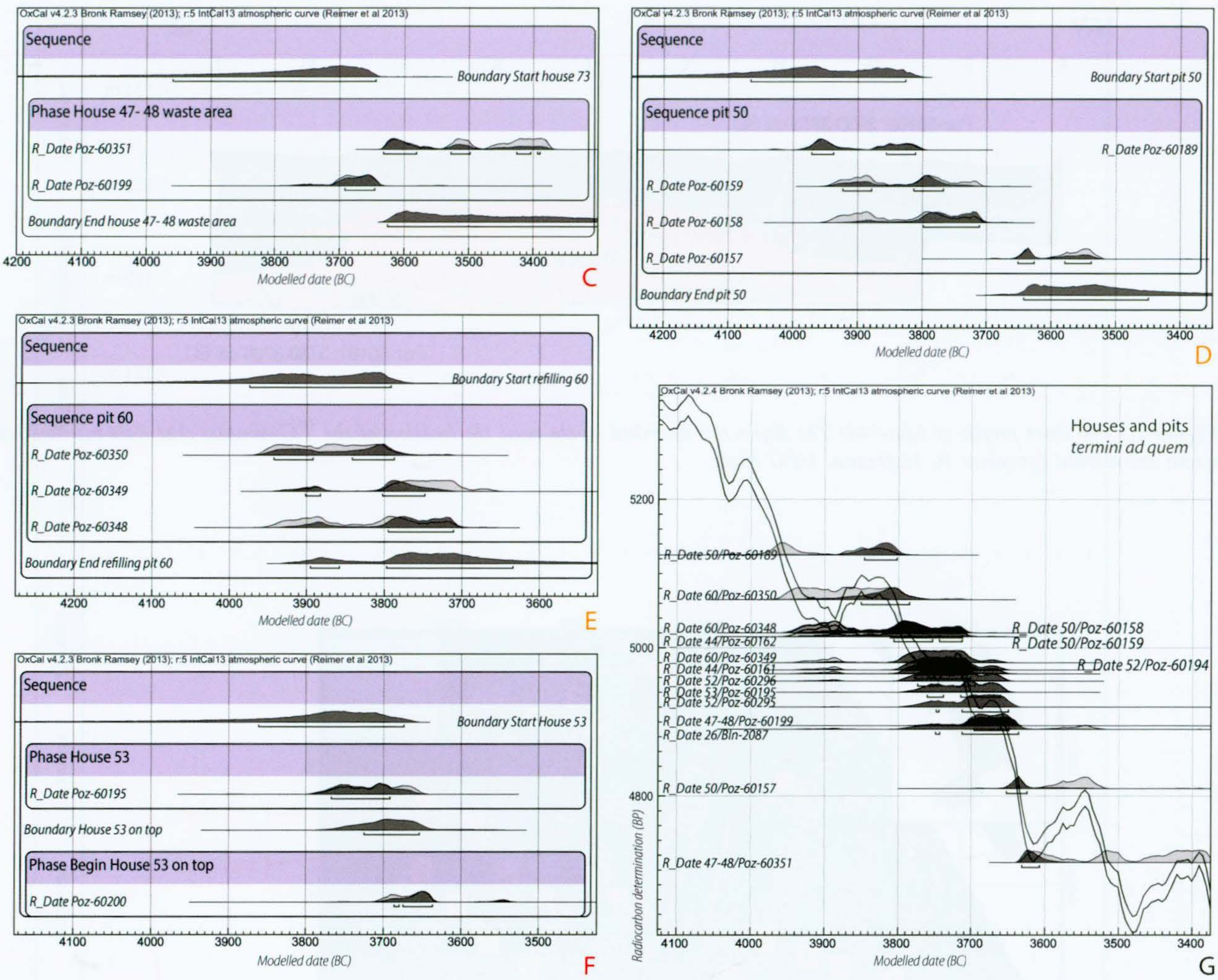

***Figure 3.** Continued.*

Ring 4 (houses 47 and 48; pit 50)

In trench 73, a very similar stratigraphy provided information about the depositional processes of not only one, but also two houses, which are visible as the geomagnetic features 47 (15 m × 5 m) and 48 (15 m × 5 m). The small test-trench included the mere *c.* 0.5 m free space in between the two houses (Müller *et al.*, in print). From the layer of domestic use between the houses, two samples represent *termini ad quem* of house use (of both houses?), which dates to the 37th century BCE, probably to the first half of this century: Poz-60351 with a longer span (4710 ± 35 bp (*Ovis*/*Capra*) 3672–3378 cal BC) and Poz-60199 with a shorter span (4895 ± 35 bp (medium mammal) 3697–3649 cal BC) (Figure 3).

Pit 50 of trench 50 is associated with house 12, which also belongs to ring 4. From seven samples, in three cases, the sample material is from long-lived species (*Quercus* or *Fraxinus*). They should be handled as *termini post quem*. Of the remaining samples, Poz-60189 (5065 ± 35 bp, bone, *Bos*, 3944–3801 cal BC) is relevant for the deepest infilling, Poz-60159 (5020 ± 30 bp, bone, *Bos*, 3933–3766 cal BC) for a following infilling, Poz-60158 (5020 ± 35 bp, bone, *Ovis*, 3936–3725 cal BC) for a middle fill, and Poz-60157 (4810 ± 35 bp, *Bos*, 3645–3534 cal BC) for the youngest infilling of the pit. While the first three samples mentioned are clearly *termini ad quem*, the last also could be a *terminus ante quem* for latest infillings. In principle, there is a high probability that the first infilling took place in the 39th century BCE, the second in the 38th century BCE, and the third in the 37th century BCE (Figure 3).

An older date that was gained from excavation unit Zh (1973 excavation) probably also belongs to ring 4. This feature, house 26, lies in the southwest of the settlement. No context is known for the date Bln-2087 (4890 ± 60 bp; charcoal, 3761–3636 cal BP), but the date within the 37th and 36th centuries BCE fits with the general pattern of the radiometric dates (List 2).

Ring 5 (pit 60)

The pit was filled with an immense mass of daub and belonged probably to ring 5, or perhaps to ring 6 (cf. Müller & Videiko, 2016; Müller *et al.*, in print). The five radiometric dates are distributed across each phase of the pit. While two dates represent *termini post quem* because of the longevity of their sample material (*quercus, fraxinus*), three could be termed as *termini ad quem*: Poz-60350 (5065 ± 35 bp, bone, *Bos*, 3944–3801 BC) for the oldest phase, Poz-60349 (4980 ± 35 bp, bone, *Bos*, 3790–3707 BC) for the middle phase, and Poz-60348 (5020 ± 35 bp, bone, large mammal, 3936–3715 cal BC) for the youngest phase. If we take into consideration the life span of the samples, the oldest phase 1 dates to the end of the 39th century BCE, the second phase to the turn of the 39th/38th centuries BCE, and the last phase to the 38th century BCE (Figure 3).

Ring 6 (house 50)

The burnt remains of house 50 (geomagnetic feature 13 m × 4 m) and the associated layers on the eastern side of the house were excavated in the 1 × 2 m test-pit. From the greyish layer on top of the daub beside the house, a sample represents a *terminus ante quem*. Nevertheless, the date from the second half of the 37th century/the first half of the 36th century BCE (Poz-60352: 4820 ± 30 bp, bone, *Bos*, 3650–3536 BC) is in line with other dates from the site.

Ring 8 (house 52)

In trench 77 (ring 8), parts of house 52 and the northern area beside house 52 could be included in a test trench (Figure 1). Within the stratigraphy, a sample from the daub layer represents a *terminus ad quem* for the use of the house that obviously dates to the 38th century BCE: Poz-60194, 4970 ± 35 bp, bone, *Ovis/Capra*, 3783–3705 cal BC.

Ring 9 (house 53)

In trench 79, house 53 with strongly burnt walls was identified in the test trench (Figure 1). Both layers, directly on top of the feature and the greyish layer that could be associated with the use-period of the house, yielded samples for radiometric dating. While the samples, Poz-60200 (4875 ± 35 bp, bone, *Ovis/Capra*, 3695–3640 BC) and Poz-60201 (4450 ± 30 bp, bone, medium mammal, 3320–3025 BC), represent *termini ante quem* in the 37th century BCE, Poz-60195 (4940 ± 35 bp, bone, *Sus*) represents a *terminus ad quem* (associated with the daub layer): 3761–3661 cal BCE. Linked with its stratigraphic position beneath the t.a.q.-samples, a date in the second half of the 38th century is most probable for house 53.

In conclusion, the series of thirty-five radiocarbon dates from Maidanetske, and the critical evaluation of their context, provides information about the chronological relevance of different features. For the first time, it was possible to gain dates from nearly all of the different rings of a Trypillia settlement as well as from pits. The context analyses of the radiometric dates showed that only fourteen dates are *termini ad quem*, which are associated with the use of the houses or the pits. The time interval of these fourteen dates could be reduced by using other *termini ante* and *post quem*, which were in a stratigraphic relation with *termini ad quem*. Of the fourteen dates from use-periods, seven are from houses and seven from pits. In general, the results are twofold:

1. The radiocarbon dates display statistically identical dates for all houses that were dated. As they are associated with burnt houses (no unburnt house was sampled), the dates support the model of a contemporary existence of these houses and their probably deliberate destruction around 3785/3590 BCE (Figure 3).

Furthermore, the dated pits also result in a similar timespan (*c.* 3915/3615 BCE). In consequence, burnt material from the houses and the upper fill of the pits represent the latest settlement event: the time at which (most of) the site burnt down. The vicinity and the full burning of whole houses, resulting in nearly rectangular remains of daub, was obviously a deliberate act. In consequence, the 2297 burnt houses which are known from the geophysical survey (cf. Rassmann *et al.*, 2016; Müller & Videiko, 2016) date to the aforementioned timespan. Perhaps, we also could add the 671 partly eroded or unburnt houses, or maybe they belonged to a different stage in the development of the settlement (Ohlrau, 2015).

1. In contrast to most of the houses, whose remains represent the latest stage of the development, pits contain different stages of infilling that represent longer histories of the place. Evidence from pits 50 and 60 confirms that the earliest activities already took place *c.* 3940/3790 BCE. As pits are associated with single houses, this seems to confirm a dismantling of house structures from time to time so that primarily only the latest built structure remained in the Neighbourhood of the pits (cf. contribution Müller & Videiko, 2016).

The latest stage of infilling in both pits is dated to the 38th to 37th century BCE. In consequence, around 3700 cal BCE most of the settlement existed contemporarily. Both pits and houses were in use. The typo-chronological estimation of the excavated assemblages places Maidanetske in a final stage of the C1 phase 3 of the Tomashivska group (Müller *et al.*, in print).

To sum up: the ^{14}C-dates from Maidanetske make a model in which at least the burnt houses could be in contemporary use much more probable. Thus, both the symmetrical ground plan of the site, and the burning of the houses, could be taken as further arguments which underline the contemporaneity of the structures.

Estimation of Maidanetske Population Size

The results of the dating of the settlement structures enable us, for the first time, to calculate the population size of Maidanetske based on a solid chronological assumption. While preliminary population estimations were based either on a general assumption that the contemporary existence of structures was visible from the symmetrical ground plan, or on calculations of the carrying capacity, the radiometric dates make the contemporaneous existence of a huge number of the detected houses more reliable. The reflection of house classes in the geomagnetic plan, as were detected in former and recent excavations, displays different types, but in general a standardization is obvious (cf. Kruts, 1989; Chernovol, 2012: 200). If we build a model of population size on this baseline, at least 2297 houses were in use more or less contemporarily, or perhaps even 2968 (including the unburnt houses).

All excavated houses from Maidanetske displayed very similar internal installations, including one fireplace each (cf. Shmaglij & Videiko, 2003; Müller & Videiko, 2016). The artefacts and macro-remains also characterize subsistence activities, which are bound to a 'living' household (cf. Kirleis & Dal Corso, 2016). Furthermore, the colluvial sediments that were formed during the time of occupation indicate significant human activities (cf. Kirleis & Dreibrodt, 2016). In consequence, there is no doubt that each house was occupied by residential groups, probably families.

The average Maidanetske house size of 77 m^2 enables us to calculate the inhabitants against the background of known space requirements for persons in sedentary societies (Ohlrau, 2015). There have been several attempts to calculate the correlation between house sizes and the size of the group of inhabitants living in a house. Classical intercultural studies by Naroll, Casselberry, and Brown result in the need for 6–10 m^2 for one person (Naroll, 1962; Casselberry, 1974; Brown, 1987), modified by Porčic with an index of mobility to an average of 6.97 m^2 (Porčic, 2012). If the deviations from the general median are taken into account, the synthesis of these ethnographical observations confirms that a person needs 5–15 m^2 in a house, averaging, for example, the 6.97 m^2 from Porčic.

The estimated population of Maidanetske adds up, under conservative estimations, to about 12,000 inhabitants, with an improbable maximum of about 46,000 inhabitants and a probable average of 29,000 inhabitants (Table 1), if we reconstruct the contemporary use of houses around *c.* 3700 BCE, as suggested by the radiometric dating. If we take into account the possibility that only half of the houses were contemporary in use, still about 14,500 ± 8,500 inhabitants are expected to have lived contemporarily in Maidanetske.

As no general differences between the mega-sites have been observed, an application of the Maidanetske demographic calculation model to other mega-sites is possible. Using the estimations of Porčic: for Dobrovody 14,100–16,200, for Taljanky 15,600–21,000, and for Maidanetske 22,300–23,800 inhabitants were calculated, if only the burnt structures were taken into consideration (Ohlrau, 2015). For Taljanky Kruts about 14,175 inhabitants had been already calculated (Kruts, 1989).

Typology, Chronology, and Spatial Developments in the Southern Buh and Dnipro Interfluve

As already emphasized, the validity of a precise regional chronological system for the Volodymyrivsko-Tomashivska and Kosenivska group (Trypillia BII/C)

Table 1. *Population estimations for Maidanetske based on estimated maximal and minimal areas per person and estimated maximal and minimal numbers of contemporary houses (2297 houses: burnt houses; 2968: burnt and unburnt houses; 2633 houses: average between bot values).*

Area/person	Houses 2297 (minimum house number)	Houses 2633 (mean house number)	Houses 2968 (maximum house number)	
	176,869 m^2	202,741 m^2	228,536 m^2	77 m^2 per house
5	35,373.8	40,548.2	**45,707.2**	
6,97	25,375.75	**29,087.66**	32,788.2	
15	**11,791.22**	13,516.33	15,235.7	

If only every second house was used contemporary, about 14.500 inhabitants lived in Maidanetske around 3700 BCE.

is of major importance for the reconstruction of the demographic processes and mobilities within the Southern Buh and Dnipro Interfluve, and to answer the question of whether mega-sites existed contemporarily, and if so, which ones.

Since the ground-breaking spatial and chronological analyses of Passek in the 1930s and 1940s (Passek, 1949), the division into a western and an eastern Trypillia spatial and stylistic tradition became clear (compare, for example, Ryzhov, 2012: 84). On the one hand, the general periodization and phasing of Trypillia is accepted by Moldovian and Ukrainian archaeology in general, on the other hand, regional and local patterns create typo-chronologies for regional and local groups that are sorely discussed (Wechler, 1994; Kruts, 2012: 73; Menotti, 2012: 2f. figure 2; Ryzhov, 2012: 80 ff.; Kadrow, 2013; Diachenko & Menotti, 2015).

Figure 4 compiles the relevant Trypillia periods, phases, and local group development with sub-phases and associated sites for the area under interest. In principle, periods identify general Trypillia developments that are seen in the whole distribution area; phases, the traditional division into general phases; local groups represent the typologically similar groups, which differ from area to area; sub-phases and stages, the division into local chronological units; further and associated sites, the key sites, which are related by Ukrainian research to the typological groups. For Maidanetske, whose assemblages are associated with Trypillia C1 and the Uman area the Volodymyrivsko-Tomashivska and Kosenivska local group is the especially relevant 'typological container', typological belonging to western Trypillia. While the general chronological development of Trypillia periods and phases is supported by some scientific dating, the typological division into sub-phases within the Volodymyrivsko-Tomashivska and Kosenivska local group is under discussion (Diachenko, 2012; Diachenko & Menotti, 2012). In particular, the typological differences during

BCE	Trypillia period	Trypillia phase	Trypillia local group	Subphase of local group		Associated sites	Ass 14C	Biggest site (estimation of inhabitants)
3350–3600	late	CII	Kosenivska (K)	K2/K3 (CII/1)		Vilkhovets 1 Kosherzhyntsi-Shulgivka		2500
				K1 (CII/1)		Apolianka Kosenivka		200
3600–3850		CI	Tomashivska (T)	T4		Tomashivka Rakhny Sobovi		
				T3	Stage 2	*Maidanetske*	3670–3800	15.000
					Stage 1	*Taljanky*	3730–3850	12.000
				T2		*Dobrovody* Yatranivka 1		10.000
				T1		Sushkivka		
3750–4100	middle	BII	Nebelivska (N)	N2	Stage 2			
					Stage 1	Glybochok Yampil Khrystynivka 1		4.500
				N1		*Nebelivka* Kryvi Kolina	3800–3970	9.000
			Volodymyrivska (V)	V late		Volodymyrivka Peregonivka		
				V early		Fedorivka		6.700
4100–4200		BI/BII						
4200–4600	early	BI						
4600–4800		A						

Figure 4. *The chronology of Trypillia. Besides the main periodization and phasing, the Trypillia regional groups display characteristic inventories with sub-phases. The main mega-sites are indicated in* italics *(after Diachenko, 2012; Kadrow, 2013; Kruts, 2012; Menotti, 2012; Ryzhov, 2012; Wechler, 1994). The radiometric data describe the chronological value also of CI-sub-phases.*

B2 and C1 might reflect partly non-chronological aspects of the Trypillia-settlements (cf. Videiko, 2003; Rassamakin & Menotti, 2011).

In principle, the typo-chronological model of Ryzhov (2012: 91 ff.) is generally used for the description of the Late Trypillia development in the Southern Buh and Dnipro Interfluve. Thus, the early B2 Volodymyrivska group is associated with one-colour, two-colours, incisions; incisions and colour pottery, while the late B2 Nebelivska local group displays painted pottery that shows links to the West. Beside the mega-sites, Nebelivka and Glybochek (<200 ha) settlements of only a few hectares are also known. In the established typo-chronology, the succeeding C1 Tomashivska local group is divided into four phases, defined by different quantities in the distribution of ceramic shapes and ornamentation, for which the 'Tomashivska-type' painting with, for example, the display of animals in the "ribbon" manner and the large number of 'tree of the world' drawings' is typical (Ryzhov, 2012: 101) (Phase 1: besides Nebelivka local group elements, the introduction of table crockery, for example, with comet-shaped and simplified line patterns. Phase 2: the sharp-ribbed nature of table crockery types is prominent, as is the standardization of Tangentenkreisband. Phase 3: the presence of sharp ribbing and high shoulders is prominent. Phase 4: sharp profiles). The prominent mega-sites are associated with C1 phase 2 (Dobrovody), Phase 3 (Stage 1: Taljanky; Stage 2 Maidanetske; cp. Diachenko & Menotti, 2012), while the size of sites is generally decreasing with C1 Phase 4 (Tomashivska) and the C2 Kosenivska local group.

Using the typological categories of ceramic shapes and ornamentation, which Ryzhov developed and described (Ryzhov, 1999, 2012), we conducted a CA to identify the statistical gradient of the probable typological similarity sequence. In principle, the first two eigenvectors of the CA verify the typological sequence as developed by Ryzhov (Figure 5). A continuum of a parabola-shaped 'cloud' of types and phase-markers identifies a steady and unbroken typological sequence for BII and CI inventories. Clusters of sets with typological similarities could be labelled, which in most cases are congruent with the typological sequences which were developed by Ryzhov. The CA sequence starts with the BII inventories of the Volodymyrivska local group (V), followed by Nebelivska group

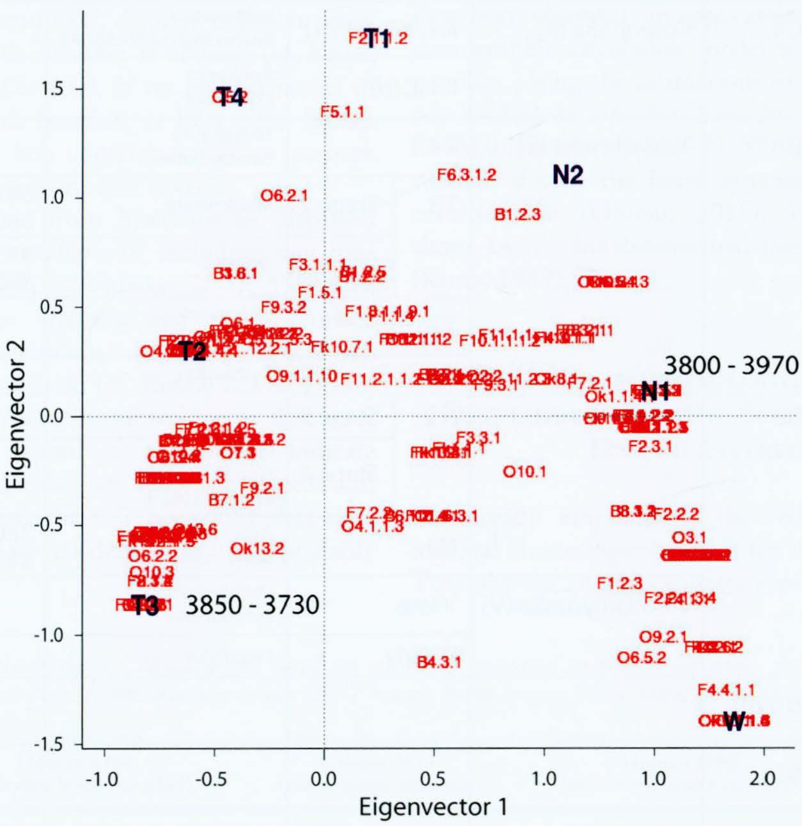

Figure 5. *CA of ceramic shapes and ornamentation types of the Volodymyrivska-Nebelivska-Tomahivska local group sub-phases that were developed by Ryzhov (1999). The typological sequence displays a continuum with a normal distribution of the types that were analysed. The absolute chronological duration of Nebelivka, Taljanky, and Maidanetske, which is based on the available* ^{14}*C-data, confirms the chronological relevance of the sub-phases, but also indicates the contemporaneity of styles (graphics: L. Brandtstätter/J. Müller, UFG Kiel).*

inventories of different typological stages (N1 and N2). For the CI Tomashivska local group, four different clusters of typological similarity groups (usually labelled as stages or sub-phases) were developed, of which at least three are in the 'right' sequence: First, eigenvector values for T1, T2, and T3 are in a steady reduction of the values. Only the CI/T4 phase has, judged on a statistical basis, more typological similarities with T1 and T2 than with T3. In principle, we would exclude T4 to be the latest stage in a typological sequence. Nevertheless, in general, the sequence supports the typological classification and sequencing of Ryzhov. The exception of CI/T4 might be due to the fact that mainly smaller and medium-sized sites are identified within this typological cluster, which are partly typologically linked with the other sites from T1 to T3 and only partly later.

Does the detailed typological sequence of the 12 phases, sub-phases, and stages (Figure 4) represent a chronological development or are we also confronted with typological differences that are due to other factors? Within the CA, we reduced the precise typological division to nine sub-phases, for which we could ask a similar question. Owing to the lack of vertical stratigraphies for the CI subgroups, a reliance on ^{14}C-data is a given.

Including Kyiv-data, at the moment there are about 282 radiometric dates published for Cucuteni-Trypillia (Lists 1 and 2). Excluding Kyiv-data, as they are extremely variable and not in line with other labs, only 43 dates remain for Ukrainian sites. In the regional sequence of radiometric dates, only information and data from Taljanky (Trypillia CI/T3 Stage 1) and Maidanetske (Trypillia CI/ T3 Stage 2) are published, and information on data from Nebelivka (Trypillia BII/N 1) is available (Chapman, 2015).

The information on the duration of the sites, which was reconstructed from radiometric dates, implies the chronological meaning of the typological sequence that we are discussing. Using the formalized statistical approach for ^{14}C-dates, Nebelivka existed from 3970 to 3800 BCE (Chapman, 2015); Taljanky from 3860 to 3730 BCE (Rassamakin & Menotti, 2011); and Maidanetske from 3800 to 3670 BCE (Figure 6).

As these radiometric data are the result of careful context analyses, they are very useful in the interpretation of the CA:

1. On the one hand, the chronological tendency of the CA is proven. On the other hand, the chronological overlap, for example, of the Nebelivka and Taljanky dates, which spans over six typological

Figure 6. *CA of ceramic shapes and ornamentation types of the Volodymyrivska-Nebelivska-Tomahivska local group sub-phases (BII/CI T 1–3) that were developed by Ryzhov (1999). In addition, inventories of the 2013 Maidanetske excavation are added. The ^{14}C-dates indicate chronological tendencies (graphics: L. Brandtstätter/J. Müller, UFG Kiel).*

sub-phases and stages, clearly demonstrates the long duration of many of the ornamentation types and ceramic shapes. In consequence, only the main focus of their distribution in time is marked by the position of phases and sub-phases within the CA and in the chronological draft (Figures 4 and 5). This is in line with the observation of a continual increase and decrease of the different types.

2. The overlap, especially of the data from Maidanetske and Taljanky, suggests that, for these two mega-sites, besides a weak chronological tendency both existed more or less contemporarily (as also noted by Ryzhov, 1999; Shmaglij & Videiko, 2003; Diachenko, 2012).

In a further CA, the new inventories from the 2013 Maidanetske excavation were integrated (Figure 6). They mark the final stage of the development very clearly. Even the association of these units with their *termini ad quem* indicate chronological tendencies of the final stage of the Maidanetske development and the pit inventories.

Interpretation: Contemporary Mega-Sites

Consequently, in the development of ceramic ornamentation and ceramic shapes we could identify types, which are older and younger in tendency. The differentiation between sub-phases and stages is, for the majority, a question of different quantities in the distribution of ornament and shape types, as Ryzhov already remarked (Ryzhov, 2012). While in this sense, besides the similarities in the inventories, a 'progressive' development could be seen in a sequence from Nebelivka–Sushkovka–Dobrovody–Taljanky–Maidanetske; the contemporary existence of two to three mega-sites at a time is also most probable. Nebelivka lasted until Taljanky was already built up; Taljanky and Maidanetske are more or less contemporary.

As the population calculations indicate, an enlargement of the population in the mega-sites themselves from Dobrovody to Taljanky to Maidanetske took place; obviously a population flow between these sites existed throughout their occupation. In principle, there seems to be a tendency that the bigger the site, the more attractive it is. As the development is quite flexible, the temporal limits for the spatial detection of land-use patterns are artificial (cf. Ohlrau *et al.*, 2016). Nevertheless, population values are quite high. For example, around 3750 BCE we have to deal with about 3500 houses minimum, thus a minimum of 17,500 inhabitants in an area of about 100 km^2 at the Taljanka River.

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Trypillia Mega-Sites and European Prehistory 4100-3400 BCE

Edited by Johannes Müller, Knut Rassmann and Mykhailo Videiko

In European prehistory population agglomerations of more than 10,000 inhabitants per site are an infrequent phenomenon. The unexpected discovery of the Trypillia mega-sites, excavated nearly 50 years ago by Soviet and Ukrainian archaeologists using a multidisciplinary approach, uncovered the remains of more than 2000 houses spread over 250 hectares. These extraordinary mega-sites developed at the border of the North Pontic Forest Steppe and Steppe zone ca. 4100–3400 BCE.

The excavations provoked many questions: why, how and under what environmental conditions did Trypillia mega-sites develop? How long did they last? Were social and/or ecological reasons responsible for this social experiment? Do Trypillia and the similar sized settlement of Uruk exhibit two different concepts of social behaviour?

During the last decade, paradigm change in fieldwork and excavation strategies enabled research teams to analyse the mega-sites in their spatial and social complexity. High precision geophysics, targeted excavations and new systematic field strategies have provided detailed empirical data. Probabilistic models based on ^{14}C-dates indicate the contemporaneity of the mega-site house structures. Such archaeological research has contributed immensely to our understanding of anthropogenic induced steppe development and subsistence mechanisms that forestalled carrying capacity.

Trypillia mega-sites are an independent European occurrence differing from the concepts of urbanism and social stratification found in similarly sized sites in Mesopotamia. The new Trypillia research can be seen as methodological progress in European archaeology.

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Cover images (left to right): Maidanetske (Talne district). South area of the mega-site today (photo: S.Jagiolla, Kiel); Taljanky (Talne district). Kiln B, View from the North (photo: A. Korvin-Piotrovskiy, Kiev); Lehedzyne (Talne district). Trypillia house reconstructed (background), ^{14}C-calibrated dates from Maidentske: houses and pits, termini ad quem (foreground) (photo: S. Jagiolla, Kiel).

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